INJURY EXPERIENCE IN COAL MINING, 1957

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* * * * * * * * * * * information circular 7987

MARCH 3, 1849

UNITED STATES DEPARTMENT OF THE INTERIOR
Fred A. Seaton, Secretary

BUREAU OF MINES
Marling J. Ankeny, Director

This publication has been cataloged as follows:

U.S. Bureau of Mines.
Injury experience in coal mining, 1957. [1948–

Washington, U.S. Govt. Print. Off.

v. 26 cm. annual. (*Its* Information circular 7859, etc.)
Issued 1948–52 as its Bulletin 509, 525, 540, 549, 559 (TN23.U4)

1. Coal mines and mining—Accidents. 2. Coal mines and mining—U.S. I. Title. (Series)

TN23.U71 no. 7859, etc. 622.06173
U.S. Dept. of the Int. Library.

For sale by the Superintendent of Documents, U.S. Government Printing Office
Washington 25, D.C. - Price 45 cents

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INJURY EXPERIENCE IN COAL MINING, 1957
ANALYSIS OF MINE SAFETY FACTORS, RELATED EMPLOYMENT, AND PRODUCTION DATA[1]

By

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Introduction and Summary

INJURY DATA and experience at coal mines in the United States for 1957 are presented in this bulletin under the following general sections:

(*A*) *General injury experience:*
Tables 1–6: Current data on number of fatal and nonfatal injuries, frequency and severity rates, and average severity.

(*B*) *Selected injury experience:*
Tables 7–36: Current data on causes of injuries, distribution of injuries by part of body injured, days of disability, extent of hand and machine loading, experience by employment and production groups, and various other operating factors and physical conditions related to the occurrence of injuries at the Nation's coal mines.

(*C*) *Injury experience, by States:*
Tables 37–41: Data on injuries, injury rates, employment, causes of injuries, and severity rates.

(*D*) *Major disasters:*
Table 42: Data on major disasters from 1948 to 1957. A major disaster is defined as a single accident in which, or as a result of which, five persons or more are killed instantly or die at any time thereafter.

(*E*) *Historical coal-mine-fatality experience:*
Tables 43–47: Data on fatalities and their causes at bituminous-coal, lignite, and anthracite mines from the earliest records through 1957.

ACKNOWLEDGMENTS

The Bureau of Mines gratefully acknowledges the cooperation of the coal-mining companies and State mining officials in supplying details on injuries and related employment and production data, which have made possible the presentation of comparable injury statistics for the industry in 1957.

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GENERAL INJURY EXPERIENCE IN 1957

In 1957 a fatality-frequency rate of 1.17 per million man-hours was recorded, the highest for the Nation's coal-mining industry since 1947, and the nonfatal-injury-frequency rate (46.04) was higher than any comparable rate since 1953. A total of 19,270 fatal and nonfatal injuries occurred, at a frequency rate of 47.21 during 408 million exposure hours. The combined (fatal and nonfatal) rate of 37.44 injuries per million tons of coal mined was the lowest since 1930, when data on nonfatal injuries were first collected.

Reports from operating companies showed 254,725 men working, the lowest number since 1910, when complete records of employment were available for the first time. Employees worked an average of 204 days during the year. Production of coal in 1957 was 514.7 million tons, of which 489.2 million were mined in the bituminous-coal and lignite fields and 25.5 million in the Pennsylvania anthracite region. The productivity rate reached an alltime high—1.26 tons per man-hour.

Injuries to employees caused 478 fatalities and 18,792 nonfatal disabilities. Of the nonfatal injuries, 15 resulted in permanent total disability, 440 in permanent partial disability, and 18,337 in temporary total disability. The time-loss or severity rate of all injuries (fatal and nonfatal) was 9,247 days per million man-hours of exposure. The rate for fatalities was 7,026—the highest since 1947; the nonfatal rate, 2,221, was the lowest since 1944 when days of disability were first collected by the Bureau. The average severity (days lost or charged per injury) of all injuries was 196—the highest in the 14-year period. The number of days lost or charged for all coal-mining injuries during 1957 was 3,774,672 (2,868,000 to fatalities and 906,672 to nonfatal injuries).

DESCRIPTION OF DATA

The data in this publication were compiled from reports furnished by bituminous-coal (including lignite) and anthracite producers on two questionnaires of the Bureau of Mines—form 6–1420, "Employer's Report of Coal-Mine Injury," and form 6–1420A, "Coal-Mine Injuries and Employment." Injury and employment data cover all men at an operation who were engaged in production, maintenance, and repair work, including supervisory and technical personnel. Data on office force, coke-workers, and employees in stores or affiliated industries are excluded. The companies report actual man-hours and man-days of work on productive and nonproductive days. Man-hour data are reported on a portal-to-portal basis, which includes working, travel, and lunch times. The average number of men working daily is calculated by dividing the number of active or productive days into the reported man-days of work.

Injury data were obtained from analysis of descriptive reports, furnished by the producers, of each disabling injury. (A disabling injury is one that results in death, permanent impairment, or loss of time, beyond the day of injury, from a regularly established job at the mines.)

Days of disability for temporary injuries were found by counting calendar days, beginning with the day following the date of injury and ending with the day before the injured employee returned to work. Permanent partial, permanent total, and fatal injuries were charged with days of disability according to the standard scale of time charges of the American Standards Association, Z16.1, revised 1954.

GENERAL INJURY DATA, 1957

TABLE 1.—*Salient statistics on injuries, injury rates, employment, production, and productivity at coal mines in the United States, 1953–57*

	1953	1954	1955	1956	1957
BITUMINOUS-COAL MINES					
Number of injuries:					
Fatal	397	334	360	392	427
Nonfatal	20, 112	14, 746	15, 966	16, 486	15, 915
Total	20, 509	15, 080	16, 326	16, 878	16, 342
Injury rates:					
Frequency per million man-hours:					
Fatal	0. 89	0. 99	0. 96	1. 02	1. 17
Nonfatal	45. 26	43. 66	42. 76	42. 99	43. 74
Frequency per million tons:					
Fatal	0. 87	0. 85	0. 78	0. 79	0. 87
Nonfatal	44. 12	37. 62	34. 52	33. 22	32. 53
Time loss per million man-hours:					
Fatal	5, 361	5, 934	5, 785	6, 134	7, 040
Nonfatal	2, 681	2, 566	2, 398	2, 196	2, 197
Time loss per million tons:					
Fatal	5, 225	5, 113	4, 670	4, 740	5, 237
Nonfatal	2, 613	2, 211	1, 936	1, 697	1, 634
Average severity (days lost per injury):					
Permanent partial	708	679	624	663	584
Temporary total	36	35	33	31	32
All injuries	174	190	187	189	206
Men working daily	295, 425	241, 919	225, 539	227, 778	223, 900
Man-hours worked	444, 318, 839	337, 727, 219	373, 383, 853	383, 442, 217	363, 895, 911
Production (short tons)	455, 885, 461	391, 952, 497	462, 519, 381	496, 230, 562	489, 175, 300
Productivity:					
Tons per man-hour	1. 03	1. 16	1. 24	1. 29	1. 34
Tons per man-day	8. 10	9. 17	9. 78	10. 25	10. 63
ANTHRACITE MINES					
Number of injuries:					
Fatal	64	62	60	56	51
Nonfatal	4, 146	2, 972	2, 919	3, 330	2, 877
Total	4, 210	3, 034	2, 979	3, 386	2, 928
Injury rates:					
Frequency per million man-hours:					
Fatal	0. 92	1. 23	1. 30	1. 12	1. 15
Nonfatal	59. 85	59. 18	63. 46	66. 31	64. 93
Frequency per million tons:					
Fatal	2. 10	2. 14	2. 07	1. 74	2. 00
Nonfatal	135. 85	102. 72	100. 84	103. 36	112. 69
Time loss per million man-hours:					
Fatal	5, 543	7, 407	7, 827	6, 691	6, 906
Nonfatal	2, 064	2, 665	2, 423	2, 818	2, 420

TABLE 1.—*Salient statistics on injuries, injury rates, employment, production, and productivity at coal mines in the United States, 1953–57*—Continued

	1953	1954	1955	1956	1957
ANTHRACITE MINES—Continued					
Injury rates—Continued					
Time loss per million tons:					
Fatal	12, 583	12, 857	12, 436	10, 430	11, 986
Nonfatal	4, 686	4, 625	3, 851	4, 393	4, 200
Average severity (days lost per injury):					
Permanent partial	539	850	999	988	458
Temporary total	25	------------	22	26	26
All injuries	125	167	158	141	141
Men working daily	55, 701	41, 786	34, 550	32, 507	30, 825
Man-hours worked	69, 274, 699	50, 222, 996	45, 994, 762	50, 219, 626	44, 311, 269
Production (short tons)	30, 518, 359	28, 932, 659	28, 948, 246	32, 216, 237	25, 530, 391
Productivity:					
Ton per man-hour	0. 44	0. 58	0. 63	0. 64	0. 58
Tons per man-day	3. 25	4. 23	4. 61	4. 67	4. 21
ALL COAL MINES					
Number of injuries:					
Fatal	461	396	420	448	478
Nonfatal	24, 258	17, 718	18, 885	19, 816	18, 792
Total	24, 719	18, 114	19, 305	20, 264	19, 270
Injury rates:					
Frequency per million man-hours:					
Fatal	0. 90	1. 02	1. 00	1. 03	1. 17
Nonfatal	47. 23	45. 67	45. 03	45. 69	46. 04
Frequency per million tons:					
Fatal	0. 95	0. 94	0. 85	0. 85	0. 93
Nonfatal	49. 87	42. 10	38. 43	37. 50	36. 51
Time loss per million man-hours:					
Fatal	5, 386	6, 125	6, 009	6, 198	7, 026
Nonfatal	2, 598	2, 578	2, 401	2, 268	2, 221
Time loss per million tons:					
Fatal	5, 687	5, 645	5, 128	5, 087	5, 572
Nonfatal	2, 743	2, 377	2, 048	1, 861	1, 762
Average severity (days lost per injury):					
Permanent partial	694	703	660	696	574
Temporary total	34	34	32	30	31
All injuries	166	186	183	181	196
Men working daily	351, 126	283, 705	260, 089	260, 285	254, 725
Man-hours worked	513, 593, 538	387, 950, 215	419, 378, 615	433, 661, 843	408, 207, 180
Production (short tons)	486, 403, 820	420, 885, 156	491, 467, 627	528, 446, 799	514, 705, 691
Productivity:					
Tons per man-hour	0. 95	1. 08	1. 17	1. 22	1. 26
Tons per man-day	7. 40	8. 49	9. 17	9. 56	9. 88

TABLE 2.—*Employment, production, and productivity (short tons per man-hour) data on coal mines in the United States, by kind of coal and type of mining, 1957*

	Men working [1]	Days active	Man-days worked	Man-hours worked	Production, short tons	Tons per man-hour	Number of mines
Bituminous-coal mines:							
Underground mines:							
Underground	158, 258	203	32, 097, 309	256, 698, 850	357, 887, 780	1. 39	7, 078
Surface	38, 448	206	7, 912, 216	59, 482, 636			
Total	196, 706	203	40, 009, 525	316, 181, 486	357, 887, 780	1. 13	7, 078
Strip mines	25, 321	226	5, 712, 718	45, 355, 642	123, 269, 777	2. 72	1, 765
Auger mines	1, 873	159	297, 964	2, 358, 783	8, 017, 743	3. 40	274
Total	223, 900	206	46, 020, 207	363, 895, 911	489, 175, 300	1. 34	9, 117
Pennsylvania anthracite mines:							
Underground mines:							
Underground	16, 822	195	3, 273, 223	23, 915, 335	12, 796, 086	. 54	1, 259
Surface	4, 355	209	910, 160	6, 763, 428			
Total	21, 177	198	4, 183, 383	30, 678, 763	12, 796, 086	. 42	1, 259
Strip mines	4, 546	207	939, 404	6, 695, 265	7, 538, 873	1. 13	178
Culm banks	1, 045	160	167, 794	1, 204, 586	4, 542, 694	3. 77	87
Dredges	135	209	28, 244	235, 568	652, 738	2. 77	18
Preparation plants	3, 922	188	738, 280	5, 497, 087			
Total	30, 825	196	6, 057, 105	44, 311, 269	25, 530, 391	. 58	1, 542
All coal mines:							
Underground mines:							
Underground	175, 080	202	35, 370, 532	280, 614, 185	370, 683, 866	1. 32	8, 337
Surface	42, 803	206	8, 822, 376	66, 246, 064			
Total	217, 883	203	44, 192, 908	346, 860, 249	370, 683, 866	1. 07	8, 337
Strip mines	29, 867	223	6, 652, 122	52, 050, 907	130, 808, 650	2. 51	1, 943
Auger mines	1, 873	159	297, 964	2, 358, 783	8, 017, 743	3. 40	274
Culm banks	1, 045	160	167, 794	1, 204, 586	4, 542, 694	3. 77	87
Dredges	135	209	28, 244	235, 568	652, 738	2. 77	18
Preparation plants	3, 922	188	738, 280	5, 497, 087			
Total	254, 725	204	52, 077, 312	408, 207, 180	514, 705, 691	1. 26	10, 659

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[1] Average number of men at work each day mine was active. Because absenteeism and labor turnover are taken into consideration, this number is lower than the number available for work as measured by a count of names on payroll.

TABLE 3.—*Injury experience at bituminous-coal mines in the United States, by place of work, 1957*

	Underground mines			Strip mines	Auger mines	Total
	Underground	Surface	Total			
Number of injuries:						
Fatal	375	27	402	22	3	427
Nonfatal:						
Permanent total	11	1	12	----------	----------	12
Permanent partial	308	64	372	30	3	405
Temporary total	12, 773	1, 575	14, 348	1, 077	73	15, 498
Total nonfatal	13, 092	1, 640	14, 732	1, 107	76	15, 915
Grand total	13, 467	1, 667	15, 134	1, 129	79	16, 342
Days lost:						
Fatal	2, 250, 000	162, 000	2, 412, 000	132, 000	18, 000	2, 562, 000
Nonfatal:						
Permanent total	66, 000	6, 000	72, 000	----------	----------	72, 000
Permanent partial	166, 657	41, 975	208, 632	26, 993	930	236, 555
Temporary total	416, 092	46, 896	462, 988	25, 784	2, 109	490, 881
Total nonfatal	648, 749	94, 871	743, 620	52, 777	3, 039	799, 436
Grand total	2, 898, 749	256, 871	3, 155, 620	184, 777	21, 039	3, 361, 436
Frequency rates: [1]						
Per million man-hours:						
Fatal	1. 46	0. 45	1. 27	0. 48	1. 27	1. 17
Nonfatal	51. 00	27. 57	46. 59	24. 41	32. 22	43. 74
All injuries	52. 46	28. 02	47. 86	24. 89	33. 49	44. 91
Per million tons:						
Fatal	1. 05	----------	1. 12	. 18	. 37	. 87
Nonfatal	36. 58	----------	41. 16	8. 98	9. 48	32. 53
All injuries	37. 63	----------	42. 29	9. 16	9. 85	33. 41
Time-loss rates:						
Per million man-hours:						
Fatal	8, 765	2, 723	7, 628	2, 910	7, 631	7, 040
Nonfatal	2, 527	1, 595	2, 352	1, 164	1, 288	2, 197
All injuries	11, 292	4, 318	9, 980	4, 074	8, 919	9, 237
Per million tons:						
Fatal	6, 287	----------	6, 740	1, 071	2, 245	5, 237
Nonfatal	1, 813	----------	2, 078	428	379	1, 634
All injuries	8, 100	----------	8, 817	1, 499	2, 624	6, 872
Average severity: [2]						
Permanent partial	541	656	561	900	310	584
Temporary total	32	30	32	24	29	32
All injuries [3]	215	154	208	164	266	206

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[1] All injury data are calculated separately, and total rates may differ slightly from the sums of the component rates. For man-hour and production data, see table 2.

[2] Average number of days lost per injury.

[3] Includes data for fatalities and permanent total disabilities, which have a standard time-loss charge of 6,000 days each.

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TABLE 4.—*Injury experience at Pennsylvania anthracite mines, by place of work, 1957*

	Underground mines			Strip mines	Culm banks	Dredges	Preparation plants	Total
	Underground	Surface	Total					
Number of injuries:								
Fatal	49	--------	49	--------	--------	--------	2	51
Nonfatal:								
Permanent total	3	--------	3	--------	--------	--------	--------	3
Permanent partial	22	3	25	2	2	--------	6	35
Temporary total	2, 159	157	2, 316	230	69	4	220	2, 839
Total nonfatal	2, 184	160	2, 344	232	71	4	226	2, 877
Grand total	2, 233	160	2, 393	232	71	4	228	2, 928
Days lost:								
Fatal	294, 000	--------	294, 000	--------	--------	--------	12, 000	306, 000
Nonfatal:								
Permanent total	18, 000	--------	18, 000	--------	--------	--------	--------	18, 000
Permanent partial	13, 035	485	13, 520	700	206	--------	1, 590	16, 016
Temporary total	56, 606	4, 257	60, 863	6, 009	1, 566	74	4, 708	73, 220
Total nonfatal	87, 641	4, 742	92, 383	6, 709	1, 772	74	6, 298	107, 236
Grand total	381, 641	4, 742	386, 383	6, 709	1, 772	74	18, 298	413, 236
Frequency rates: [1]								
Per million man-hours:								
Fatal	2. 05	--------	1. 60	--------	--------	--------	0. 36	1. 15
Nonfatal	91. 32	23. 66	76. 40	34. 65	58. 94	16. 98	41. 11	64. 93
All injuries	93. 37	23. 66	78. 00	34. 65	58. 94	16. 98	41. 48	66. 08
Per million tons:								
Fatal	3. 83	--------	3. 83	--------	--------	--------	--------	2. 00
Nonfatal	170. 68	--------	183. 18	30. 77	15. 63	6. 13	--------	112. 69
All injuries	174. 51	--------	187. 01	30. 77	15. 63	6. 13	--------	114. 69
Time-loss rates:								
Per million man-hours:								
Fatal	12, 293	--------	9, 583	--------	--------	--------	2, 183	6, 906
Nonfatal	3, 665	701	3, 011	1, 002	1, 471	314	1, 146	2, 420
All injuries	15, 958	701	12, 594	1, 002	1, 471	314	3, 329	9, 326
Per million tons:								
Fatal	22, 976	--------	22, 976	--------	--------	--------	--------	11, 986
Nonfatal	6, 849	--------	7, 220	890	390	113	--------	4, 200
All injuries	29, 825	--------	30, 195	890	390	113	--------	16, 186
Average severity: [2]								
Permanent partial	592	162	541	350	103	--------	265	458
Temporary total	26	27	26	26	23	18	21	26
All injuries [3]	171	30	161	29	25	18	80	141

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[1] All injury rates are calculated separately, and total rates may differ slightly from the sums of the component rates. For man-hour and production data, see table 2.

[2] Average number of days lost per injury.

[3] Includes data for fatalities and permanent total disabilities, which have a standard time-loss charge of 6,000 days each.

TABLE 5.—*Injury experience at all coal mines in the United States, by place of work, 1957*

	Underground mines			Strip mines	Auger mines	Culm banks	Dredges	Preparation plants	Total
	Underground	Surface	Total						
Number of injuries:									
Fatal	424	27	451	22	3	....	....	2	478
Nonfatal:									
Permanent total	14	1	15	....	....	....	....	....	15
Permanent partial	330	67	397	32	3	2	....	6	440
Temporary total	14, 932	1, 732	16, 664	1, 307	73	69	4	220	18, 337
Total nonfatal	15, 276	1, 800	17, 076	1, 339	76	71	4	226	18, 792
Grand total	15, 700	1, 827	17, 527	1, 361	79	71	4	228	19, 270
Days lost:									
Fatal	2, 544, 000	162, 000	2, 706, 000	132, 000	18, 000	....	....	12, 000	2, 868, 000
Nonfatal:									
Permanent total	84, 000	6, 000	90, 000	....	....	....	....	....	90, 000
Permanent partial	179, 692	42, 460	222, 152	27, 693	930	206	....	1, 590	252, 571
Temporary total	472, 698	51, 153	523, 851	31, 793	2, 109	1, 566	74	4, 708	564, 101
Total nonfatal	736, 390	99, 613	836, 003	59, 486	3, 039	1, 772	74	6, 298	906, 672
Grand total	3, 280, 390	261, 613	3, 542, 003	191, 486	21, 039	1, 772	74	18, 298	3, 774, 672
Frequency rates: [1]									
Per million man-hours:									
Fatal	1. 51	0. 41	1. 30	0. 42	1. 27	....	....	0. 36	1. 17
Nonfatal	54. 44	27. 17	49. 23	25. 72	32. 22	58. 94	16. 98	41. 11	46. 04
All injuries	55. 95	27. 58	50. 53	26. 15	33. 49	58. 94	16. 98	41. 48	47. 21
Per million tons:									
Fatal	1. 14	....	1. 22	. 17	. 37	....	....	....	. 93
Nonfatal	41. 21	....	46. 07	10. 24	9. 48	15. 63	6. 13	....	36. 51
All injuries	42. 35	....	47. 28	10. 40	9. 85	15. 63	6. 13	....	37. 44
Time-loss rates:									
Per million man-hours:									
Fatal	9, 066	2, 445	7, 801	2, 536	7, 631	....	....	2, 183	7, 026
Nonfatal	2, 624	1, 504	2, 410	1, 143	1, 288	1, 471	314	1, 146	2, 221
All injuries	11, 690	3, 949	10, 212	3, 679	8, 919	1, 471	314	3, 329	9, 247
Per million tons:									
Fatal	6, 863	....	7, 300	1, 009	2, 245	....	....	....	5, 572
Nonfatal	1, 986	....	2, 255	455	379	390	113	....	1, 762
All injuries	8, 850	....	9, 555	1, 464	2, 624	390	113	....	7, 334
Average severity: [2]									
Permanent partial	544	634	560	865	310	103	....	265	574
Temporary total	32	30	31	24	29	23	18	21	31
All injuries [3]	209	143	202	141	266	25	18	80	196

[1] All injury rates are calculated separately, and total rates may differ slightly from the sums of the component rates. For man-hour and production data, see table 2.

[2] Average number of days lost per injury.

[3] Includes data for fatalities and permanent total disabilities, which have a standard time-loss charge of 6,000 days each.

TABLE 6.—*Number of injuries and frequency- and time-loss rates* [1] *at coal mines in the United States, by degree of injury, 1957*

Degree of injury	Bituminous-coal mines			Pennsylvania anthracite mines			All coal mines		
	Number of injuries	Injury rates		Number of injuries	Injury rates		Number of injuries	Injury rates	
		Frequency	Time loss		Frequency	Time loss		Frequency	Time loss
Fatal	427	1. 17	7, 040	51	1. 15	6, 906	478	1. 17	7, 026
Permanent total	12	0. 03	198	3	0. 07	406	15	0. 04	220
Permanent partial	405	1. 11	650	35	0. 79	361	440	1. 08	619
Temporary total	15, 498	42. 59	1, 349	2, 839	64. 07	1, 652	18, 337	44. 92	1, 382
Total nonfatal injuries	15, 915	43. 74	2, 197	2, 877	64. 93	2, 420	18, 792	46. 04	2, 221
All injuries	16, 342	44. 91	9, 237	2, 928	66. 08	9, 326	19, 270	47. 21	9, 247

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[1] Frequency rate is the number of injuries per million man-hours; time-loss rate is the number of days of disability per million man-hours.

SELECTED INJURY EXPERIENCE, 1957

Bituminous-coal and anthracite mines reported 478 fatalities for 1957. Of this number 424 occurred in underground workings, 27 at surface operations, 22 at strip mines, 3 at auger mines, and 2 at preparation plants of the Pennsylvania anthracite industry. Falls of roof and face caused the death of 228 men in underground mines. These falls are the leading cause of fatal injuries in the coal-mining industry, and they represented 50 percent of the fatalities reported at deep mines in 1957. Haulage injuries and explosions of gas or dust at underground mines caused 67 each (15 percent) of the total fatalities.

At strip mines, injuries resulting from haulage accidents caused 8 (36 percent) of the total deaths in open cut mining, and machinery caused 5 (23 percent). Other leading causes were falls or slides of coal or overburden and electricity.

Auger mines reported 3 fatalities: 1 from a fall of face or rib, 1 from an explosion, and 1 from machinery.

There were 18,792 nonfatal injuries in the industry during 1957. Of this number 15,276 occurred in underground mines, 1,800 at surface operations connected with underground mines, 1,339 at stripping operations, 76 at auger mines, 71 at culm banks, 4 at dredging operations, and 226 at anthracite preparation plants.

At underground mines, including surface works, handling material caused 3,908 (23 percent) of the total number of nonfatal injuries; haulage 3,520 (21 percent); and falls of roof and face 2,732 (16 percent). Other principal causes of nonfatal injuries at underground mines were machinery, accounting for 2,448; falls of persons, 1,056; and electricity, 571.

At stripping operations, the leading causes of nonfatal injuries were handling material, 288; machinery, 282; haulage, 214; and falls of persons, 211.

Auger mines reported 25 injuries involving machinery accidents and 17 from handling material.

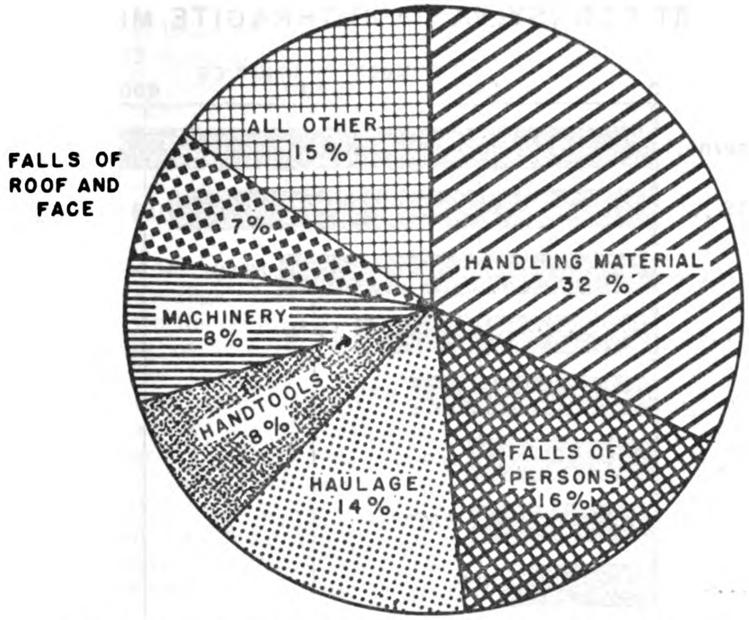
The average severity of injuries at all underground mines in 1957 was 202 days; at stripping operations, 141 days; and at auger mines, 266 days. In the bituminous-coal industry the average severity of injuries at underground mines was 208 days compared with 164 days at strip mines. However, in the anthracite region of Pennsylvania, the average severity of 161 days per injury at underground mines was more than five times as great as that of strip mines (29 days per injury). It is notable that the average severity (141 days) of all injuries at anthracite mines was 32 percent below the corresponding figure (206 days) for the bituminous-coal industry. Injuries resulting from the following major causes—explosions, suffocations, falls of roof and face, falls of persons, and electricity—had the highest average days lost per injury.

Multiple injuries caused 268 (63 percent) of the total number of fatalities reported by the bituminous-coal industry, while trunk injuries resulted in 89 fatalities (21 percent) and head injuries 59 (14 percent). Approximately 95 percent of the fatalities at anthracite mines was classified as follows: Multiple injuries 28 (55 percent); head injuries 11 (22 percent); and trunk injuries 9 (18 percent).

Injuries to the trunk caused the greatest number of nonfatal disabilities at bituminous-coal mines—4,041 (25 percent) of the total. Injuries to the hand and fingers numbered 2,950 (18 percent); to the leg (including ankle) 2,426 (15 percent); to the foot and toe 1,690 (11 percent); and multiple injuries 1,123 (7 percent). Nonfatal injuries in the anthracite industry were, in almost the same sequence: Trunk 620 (22 percent); hand and finger, 566 (20 percent); leg (including ankle), 435 (15 percent); and eye, 271 (9 percent) of the total.

At bituminous-coal mines where all coal was hand loaded, 63 fatal and 1,777 nonfatal injuries were reported. These injuries resulted in a fatality-frequency rate of 1.64 and nonfatal-frequency rate of 46.30. At mines where all coal was loaded mechanically, 238 fatal and 9,736 nonfatal injuries were reported at corresponding rates of 1.16 and 47.40, respectively. The time-loss and frequency rates for fatalities were 42 and 41 percent higher, respectively, at mines where all coal was hand loaded, while nonfatal time-loss and frequency rates were 14 and 2 percent lower than at mines where all coal was loaded mechanically. The average severity of injuries at mines where all coal was hand loaded was 246 days per injury compared with 190 days at mines where all coal was mechanically loaded.

In the Pennsylvania anthracite industry, mines reporting 60 to 79 percent of coal production loaded mechanically recorded the



AT PENNSYLVANIA ANTHRACITE MINES, 1957

AT BITUMINOUS-COAL AND LIGNITE MINES, 1957

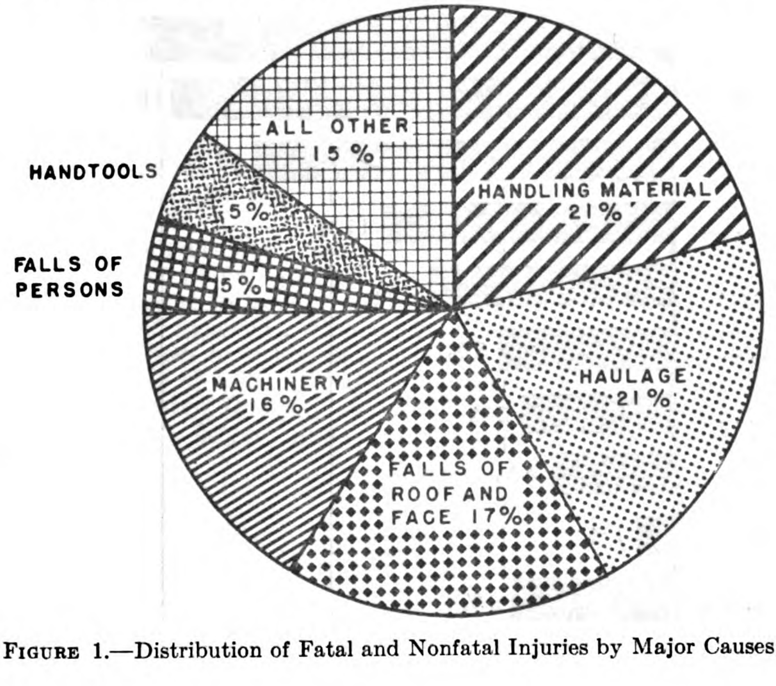


FIGURE 1.—Distribution of Fatal and Nonfatal Injuries by Major Causes.

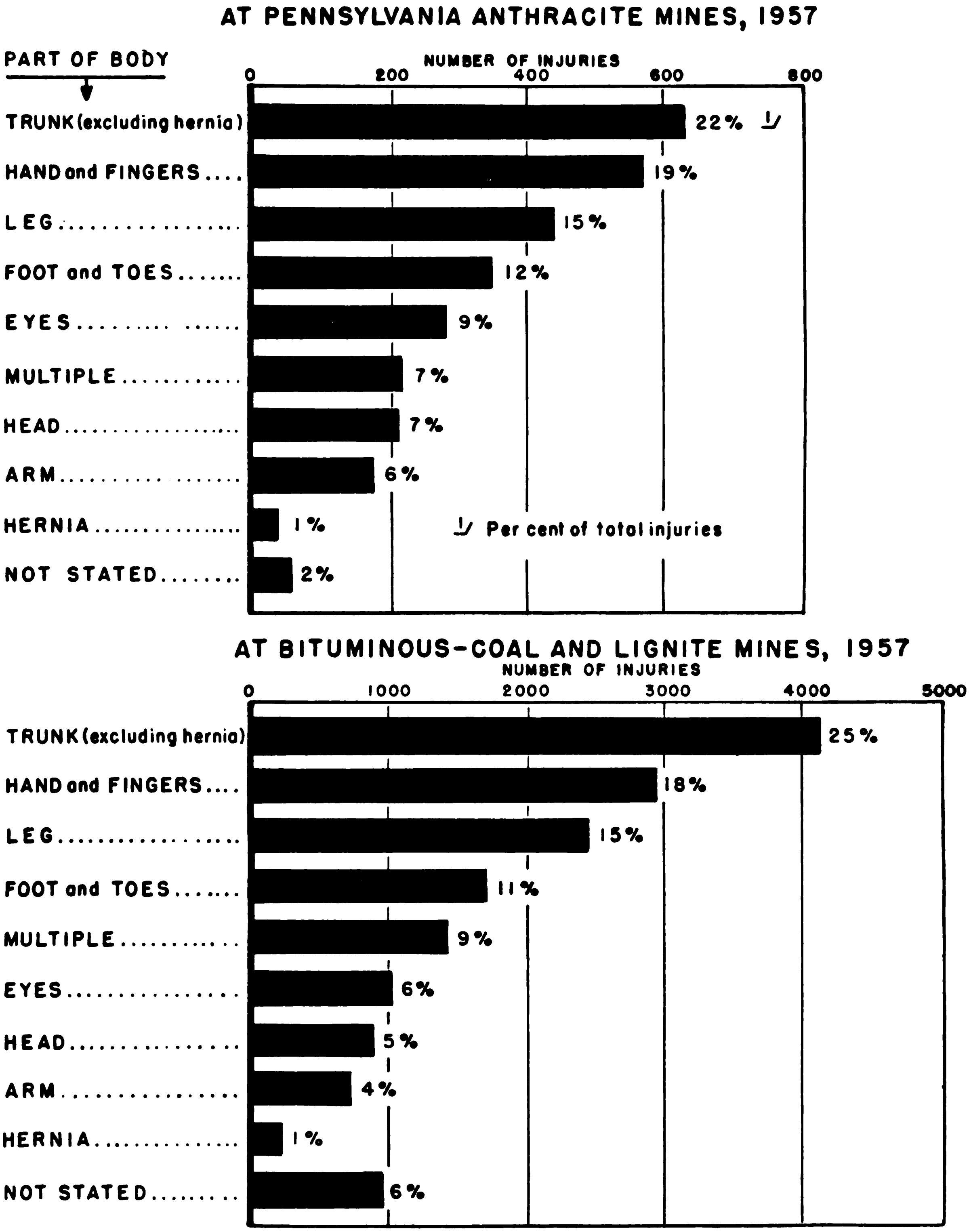


FIGURE 2.—Distribution of Fatal and Nonfatal Injuries by Part of Body.

highest fatality-frequency and time-loss rates—6.07 fatal injuries and 36,422 days per million man-hours of exposure, while those reporting 80 to 99 percent loaded mechanically had the lowest rates of the groups reporting fatalities—0.37 and 2,237, respectively. Significantly, mines reporting 20 to 39 percent of coal loaded mechanically reported no fatalities in bituminous coal or anthracite.

Nearly 6,000 bituminous-coal underground mines (5,942) employing an average of 19 men or less (including surface workers) reported 101 fatal injuries which occurred at a rate of 2.16 per million man-hours of exposure and 2.43 per million tons of coal produced. These mines produced an average of 0.89 ton of coal per hour. The 1,136 underground mines employing an average of 20 men or more (including surface workers) reported 301 fatalities, which resulted in frequency rates of 1.12 per million man-hours and 0.95 per million tons. Productivity at these mines averaged 1.17 tons per man-hour.

At bituminous-coal stripping operations, 1,418 mines employing an average of 1 to 19 men reported 7 fatalities, which resulted in a frequency rate of 0.52. These mines worked 30 percent of the total man-hours at strip mines and produced 25 percent of the total strip tonnage The remaining 347 stripping operations reported 15 fatal injuries, which occurred at a rate of 0.47 per million man-hours of exposure.

The 258 auger mines employing an average of 19 men or less reported 3 fatal injuries, which resulted in a rate of 1.84 deaths per million man-hours of exposure. The 16 auger mines employing 20 men or more had no fatalities and produced 2.4 tons of coal per hour as compared with 3.8 tons for the mines employing from 1 to 19 men.

The 1,156 anthracite underground mines employing an average of 19 men or less reported 14 fatal injuries, which occurred at a rate of 2.28 per million man-hours of exposure, while the 103 mines averaging 20 men or more had 35 fatalities occurring at a rate of 1.43. Here, as in the bituminous-coal industry, fatal-injury frequency was better in the larger mines; conversely to bituminous-coal, productivity (tons per man-hour) was slightly higher in the smaller anthracite mines—0.48 compared with 0.40. The smaller employment groups of stripping operations (1 to 19) numbered 109 mines and accounted for 18 percent of the total strip man-hours and 19 percent of the tonnage. There were no fatalities reported by anthracite stripping operations, and productivity of the groups was practically the same—1.17 in the 1-to-19 group and 1.12 in the 20-and-over group.

Injury experience (fatal and nonfatal combined) at underground mines in the bituminous-coal industry was better generally as the production groups increased in size. In mines producing less than 25,000 tons the fatality rate was 2.21 and the nonfatal rate was 42.87 per million man-hours; in mines producing 1 million tons or more, the corresponding rates were 1.32 and 34.63, respectively. Tons per man-hour at underground mines increased steadily from 0.80 ton at the first group to 1.50 tons at the latter. There appears to be no wide variance in injury frequency by production groups at strip mines. The highest rate of occurrence was 27.87 injuries per million man-hours in the tonnage group from 500,000 to 749,999, and the lowest rate (20.48) was in the group from 750,000 to 999,999. Here, again, tons produced per man-hour rose steadily from 1.46 in the less than 25,000-ton group to 4.47 in the 1-million-ton or more group. At auger mines a more favorable injury frequency was found in the lower production groups.

At underground mines in the Pennsylvania anthracite industry, the least favorable fatality rate (7.14) was recorded by mines producing 25,000 to 49,999 tons of coal. In the other production groups no important trend was noted in fatality experience nor in productivity, but the nonfatal-injury experience was higher as the production groups increased in size. At strip mines, frequency of occurrence of nonfatal injuries decreased and tons per man-hour steadily rose as the tonnage groups increased. This same trend in frequency rate of nonfatal injuries and tons produced per man-hour was noted at culm banks.

SELECTED INJURY DATA, 1957

TABLE 7.—*Comparative fatal- and nonfatal-injury data on bituminous-coal mines in the United States, 1957*

	Mines reporting fatal injuries	Mines reporting no fatal injuries	All bituminous-coal mines
Number of mines	313	8, 804	9, 117
Production short tons	115, 244, 518	373, 930, 782	489, 175, 300
Proportion of total tonnage percent	23. 6	76. 4	100. 0
Number of employees	50, 125	173, 775	223, 900
Proportion of total employees percent	22. 4	77. 6	100. 0
Number of employees per mine	160	20	24
Man-days worked	11, 114, 123	34, 906, 084	46, 020, 207
Average days worked per man	222	201	206
Man-hours worked	88, 427, 874	275, 468, 037	363, 895, 911
Average hours worked per man	1, 764	1, 585	1, 625
Production per man hour tons	1. 30	1. 36	1. 34
Number of fatalities	427		427
Number of nonfatal injuries	3, 958	11, 957	15, 915
Fatality rate per million man-hours	4. 83		1. 17
Nonfatal-injury rate per million man-hours	44. 76	43. 41	43. 74

TABLE 8.—*Comparative fatal- and nonfatal-injury data on Pennsylvania anthracite mines, 1957*

	Mines reporting fatal injuries	Mines reporting no fatal injuries	All anthracite mines
Number of mines	45	1, 497	1, 542
Production short tons	4, 683, 884	20, 846, 507	25, 530, 391
Proportion of total tonnage percent	18. 3	81. 7	100. 0
Number of employees	7, 368	23, 457	30, 825
Proportion of total employees percent	23. 9	76. 1	100. 0
Number of employees per mine	164	16	20
Man-days worked	1, 566, 043	4, 491, 062	6, 057, 105
Average days worked per man	213	191	196
Man-hours worked	11, 464, 100	32, 847, 169	44, 311, 269
Average hours worked per man	1, 556	1, 400	1, 438
Production per man-hour tons	0. 41	0. 63	0. 58
Number of fatalities	51		51
Number of nonfatal injuries	1, 004	1, 873	2, 877
Fatality rate per million man-hours	4. 45		1. 15
Nonfatal-injury rate per million man-hours	87. 58	57. 02	64. 93

TABLE 9.—*Number of injuries at coal mines in the United States, by principal injury agencies, kind of coal, and general work location, 1957*

Principal injury agency	Bituminous-coal mines		Pennsylvania anthracite mines		All coal mines	
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal
Underground mines:						
Underground:						
Falls of roof	195	2, 023	27	74	222	2, 097
Falls of roof or face from equipment knocking out support	4	45	--------	--------	4	45
Falls of face or rib	2	539	3	94	5	633
Falls of roof or face from pressure bumps or bursts	17	61	--------	15	17	76
Rushes of coal or rock	--------	23	1	79	1	102
Other falling objects	--------	322	--------	78	--------	400
Falls of persons	--------	468	1	317	1	785
Handling materials	--------	2, 663	--------	736	--------	3, 399
Handtools	--------	568	--------	171	--------	739
Stepping on objects	--------	261	--------	77	--------	338
Striking or bumping	--------	87	--------	10	--------	97
Haulage	53	2, 720	5	233	58	2, 953
Explosions (gas or dust)	63	11	3	6	66	17
Explosives	7	189	4	10	11	199
Electricity	11	501	1	26	12	527
Machinery	17	2, 162	--------	141	17	2, 303
Suffocation	2	3	3	1	5	4
Mine fires	2	23	--------	4	2	27
All other	--------	400	--------	25	--------	425
Total	373	13, 069	48	2, 097	421	15, 166
Shaft and slope:						
Falls of roof	1	1	--------	--------	1	1
Falls of roof or face from equipment knocking out support	--------	--------	--------	2	--------	2
Falls of face or rib	--------	--------	--------	1	--------	1
Rushes of coal or rock	--------	--------	--------	4	--------	4
Other falling objects	--------	1	--------	3	--------	4
Falls of persons	1	4	1	13	2	17
Handling materials	--------	6	--------	14	--------	20
Handtools	--------	2	--------	2	--------	4
Stepping on objects	--------	--------	--------	3	--------	3
Striking or bumping	--------	1	--------	--------	--------	1
Haulage	--------	8	--------	39	--------	47
All other	--------	--------	--------	6	--------	6
Total	2	23	1	87	3	110
Total, underground	375	13, 092	49	2, 184	424	15, 276

TABLE 9.—*Number of injuries at coal mines in the United States, by principal injury agencies, kind of coal, and general work location, 1957*—Continued

Principal injury agency	Bituminous-coal mines		Pennsylvania anthracite mines		All coal mines	
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal
Underground mines—Continued						
Surface:						
Rushes of coal or rock		2		1		3
Other falling objects		41		1		42
Falls of persons		224		30		254
Handling material	2	439		50	2	489
Handtools		113		18		131
Stepping on objects		24		3		27
Striking or bumping		9				9
Haulage	9	484		36	9	520
Explosions (gas or dust)	1	2			1	2
Explosives		6				6
Electricity	4	43		1	4	44
Machinery	6	138		7	6	145
Suffocation		1				1
Mine fires		6				6
All other	5	108		13	5	121
Total	27	1, 640		160	27	1, 800
Total, underground mines	402	14, 732	49	2, 344	451	17, 076
Strip mines:						
Falls or slides of coal or overburden	4	27		2	4	29
Rushes of coal or rock		7		1		8
Other falling objects		32		8		40
Falls of persons	1	176		35	1	211
Handling materials	1	232		56	1	288
Handtools		82		13		95
Stepping on objects		25		7		32
Striking or bumping		4				4
Haulage	8	162		52	8	214
Explosives		12		1		13
Electricity	2	8			2	8
Machinery	5	238		44	5	282
Mine fires	1	15		3	1	18
All other		87		10		97
Total	22	1, 107		232	22	1, 339
Auger mines:						
Falls of face or rib	1	5			1	5
Handling materials		17				17
Explosions (gas or dust)	1	3			1	3
Machinery	1	25			1	25
All other		26				26
Total	3	76			3	76
Culm bank				71		71
Dredges				4		4
Preparation plants			2	226	2	226
Grand total	427	15, 915	51	2, 877	478	18, 792

Table 10.—*Days of disability from injuries at coal mines in the United States, by principal injury agencies, kind of coal, and general work location, 1957*

Principal injury agency	Bituminous-coal mines		Pennsylvania anthracite mines		All coal mines	
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal
Underground mines:						
Underground:						
Falls of roof	1, 170, 000	140, 867	162, 000	13, 045	1, 332, 000	153, 912
Falls of roof or face from equipment knocking out support	24, 000	7, 183	--------	--------	24, 000	7, 183
Falls of face or rib	12, 000	26, 659	18, 000	9, 545	30, 000	36, 204
Falls of roof or face from pressure bumps or bursts	102, 000	5, 436	--------	452	102, 000	5, 888
Rushes of coal or rock	--------	764	6, 000	2, 395	6, 000	3, 159
Other falling objects	--------	7, 901	--------	7, 630	--------	15, 531
Falls of persons	--------	20, 521	6, 000	6, 655	6, 000	27, 176
Handling materials	--------	76, 957	--------	20, 570	--------	97, 527
Handtools	--------	17, 808	--------	2, 085	--------	19, 893
Stepping on objects	--------	6, 171	--------	603	--------	6, 774
Striking or bumping	--------	1, 777	--------	77	--------	1, 854
Haulage	318, 000	177, 815	30, 000	13, 723	348, 000	191, 538
Explosions (gas or dust)	378, 000	641	18, 000	565	396, 000	1, 206
Explosives	42, 000	16, 343	24, 000	309	66, 000	16, 652
Electricity	66, 000	6, 695	6, 000	325	72, 000	7, 020
Machinery	102, 000	115, 844	--------	6, 997	102, 000	122, 841
Suffocation	12, 000	23	18, 000	1	30, 000	24
Mine fires	12, 000	356	--------	64	12, 000	420
All other	--------	18, 078	--------	531	--------	18, 609
Total	2, 238, 000	647, 839	288, 000	85, 572	2, 526, 000	733, 411
Shaft and slope:						
Falls of roof	6, 000	7	--------	--------	6, 000	7
Falls of roof or face from equipment knocking out support	--------	--------	--------	120	--------	120
Falls of face or rib	--------	--------	--------	8	--------	8
Rushes of coal or rock	--------	--------	--------	27	--------	27
Other falling objects	--------	1	--------	62	--------	63
Falls of persons	6, 000	44	6, 000	240	12, 000	284
Handling materials	--------	171	--------	217	--------	388
Handtools	--------	8	--------	4	--------	12
Stepping on objects	--------	--------	--------	6	--------	6
Striking or bumping	--------	31	--------	--------	--------	31
Haulage	--------	648	--------	1, 368	--------	2, 016
All other	--------	--------	--------	17	--------	17
Total	12, 000	910	6, 000	2, 069	18, 000	2, 979
Total, underground	2, 250, 000	648, 749	294, 000	87, 641	2, 544, 000	736, 390

TABLE 10.—*Days of disability from injuries at coal mines in the United States, by principal injury agencies, kind of coal, and general work location, 1957*—Continued

Principal injury agency	Bituminous-coal mines		Pennsylvania anthracite mines		All coal mines	
	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal
Underground mines—Continued						
Surface:						
Rushes of coal or rock	-------	126	-------	30	-------	156
Other falling objects	-------	1, 745	-------	269	-------	2, 014
Falls of persons	-------	8, 546	-------	1, 141	-------	9, 687
Handling materials	12, 000	13, 689	-------	1, 436	12, 000	15, 125
Handtools	-------	5, 617	-------	424	-------	6, 041
Stepping on objects	-------	322	-------	16	-------	338
Striking or bumping	-------	116	-------	-------	-------	116
Haulage	54, 000	42, 463	-------	1, 067	54, 000	43, 530
Explosions (gas or dust)	6, 000	436	-------	-------	6, 000	436
Explosives	-------	169	-------	-------	-------	169
Electricity	24, 000	498	-------	2	24, 000	500
Machinery	36, 000	19, 045	-------	181	36, 000	19, 226
Suffocation	-------	262	-------	-------	-------	262
Mine fires	-------	178	-------	-------	-------	178
All other	30, 000	1, 659	-------	176	30, 000	1, 835
Total	162, 000	94, 871	-------	4, 742	162, 000	99, 613
Total, underground mines	2, 412, 000	743, 620	294, 000	92, 383	2, 706, 000	836, 003
Strip mines:						
Falls or slides of coal or overburden	24, 000	894	-------	289	24, 000	1, 183
Rushes of coal or rock	-------	76	-------	3	-------	79
Other falling objects	-------	1, 070	-------	99	-------	1, 169
Falls of persons	6, 000	8, 590	-------	642	6, 000	9, 232
Handling materials	6, 000	5, 124	-------	1, 796	6, 000	6, 920
Handtools	-------	2, 827	-------	124	-------	2, 951
Stepping on objects	-------	407	-------	110	-------	517
Striking or bumping	-------	208	-------	-------	-------	208
Haulage	48, 000	6, 313	-------	1, 635	48, 000	7, 948
Explosives	-------	2, 193	-------	25	-------	2, 218
Electricity	12, 000	73	-------	-------	12, 000	73
Machinery	30, 000	23, 103	-------	1, 508	30, 000	24, 611
Mine fires	6, 000	300	-------	250	6, 000	550
All other	-------	1, 599	-------	228	-------	1, 827
Total	132, 000	52, 777	-------	6, 709	132, 000	59, 486
Auger mines:						
Falls of face or rib	6, 000	76	-------	-------	6, 000	76
Handling materials	-------	451	-------	-------	-------	451
Explosions (gas or dust)	6, 000	439	-------	-------	6, 000	439
Machinery	6, 000	791	-------	-------	6, 000	791
All other	-------	1, 282	-------	-------	-------	1, 282
Total	18, 000	3, 039	-------	-------	18, 000	3, 039
Culm bank	-------	-------	-------	1, 772	-------	1, 772
Dredges	-------	-------	-------	74	-------	74
Preparation plants	-------	-------	12, 000	6, 298	12, 000	6, 298
Grand total	2, 562, 000	799, 436	306, 000	107, 236	2, 868, 000	906, 672

Table 11.—*Average severity of all injuries at coal mines in the United States, by principal injury agencies, kind of coal, and general work location, 1957* [1]

Principal injury agency	Bituminous-coal mines	Pennsylvania anthracite mines	All coal mines
Underground mines:			
Underground:			
Falls of roof	591	1,733	641
Falls of roof or face from equipment knocking out support	636	------	636
Falls of face or rib	71	284	104
Falls of roof or face from pressure bumps or bursts	1,377	30	1,160
Rushes of coal or rock	33	105	89
Other falling objects	24	98	39
Falls of persons	44	40	42
Handling materials	29	28	29
Handtools	31	12	27
Stepping on objects	24	8	20
Striking or bumping	20	8	19
Haulage	179	184	179
Explosions (gas or dust)	5,117	2,063	4,786
Explosives	298	1,736	394
Electricity	142	234	147
Machinery	100	50	97
Suffocation	2,405	4,500	3,336
Mine fires	494	16	428
All other	45	21	44
Total	215	174	209
Shaft and slope:			
Falls of roof	3,004	------	3,004
Falls of roof or face from equipment knocking out support	------	60	60
Falls of face or rib	------	8	8
Rushes of coal or rock	------	7	7
Other falling objects	1	21	16
Falls of persons	1,209	446	646
Handling materials	28	16	19
Handtools	4	2	3
Stepping on objects	------	2	2
Striking or bumping	31	------	31
Haulage	81	35	43
All other	------	3	3
Total	516	92	186
Total, underground	215	171	209

TABLE 11.—*Average severity of all injuries at coal mines in the United States, by principal injury agencies, kind of coal, and general work location, 1957* [1]—Continued

Principal injury agency	Bituminous-coal mines	Pennsylvania anthracite mines	All coal mines
Underground mines—Continued			
Surface:			
Rushes of coal or rock	63	30	52
Other falling objects	42	269	48
Falls of persons	38	38	38
Handling materials	58	29	55
Handtools	50	24	46
Stepping on objects	13	5	12
Striking or bumping	13		13
Haulage	196	30	184
Explosions (gas or dust)	2, 145		2, 145
Explosives	28		28
Electricity	521	2	510
Machinery	382	26	366
Suffocation	262		262
Mines fires	30		30
All other	280	14	253
Total	154	30	143
Total, underground mines	208	161	202
Strip mines:			
Falls or slides of coal or overburden	803	144	763
Rushes of coal or rock	11	3	10
Other falling objects	33	12	29
Falls of persons	82	18	72
Handling materials	48	32	45
Handtools	34	10	31
Stepping on objects	16	16	16
Striking or bumping	52		52
Haulage	319	31	252
Explosives	183	25	171
Electricity	1, 207		1, 207
Machinery	218	34	190
Mine fires	394	83	345
All other	18	23	19
Total	164	29	141
Auger mines:			
Falls of face or rib	1, 013		1, 013
Handling materials	27		27
Explosions (gas or dust)	1, 610		1, 610
Machinery	261		261
All other	49		49
Total	266		266
Culm bank		25	25
Dredges		18	18
Preparation plants		80	80
Grand total	206	141	196

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[1] Average severity is the number of days lost per injury. Basic data on number of injuries are listed in table 9; on days of disability, in table 10.

TABLE 12.—*Number and average severity of injuries at coal mines in the United States, by kind of coal, principal injury agencies, general work location, and degree of injury, 1957*

Injury agency and general location	Bituminous-coal mines							Anthracite mines							All coal mines						
	Number of injuries				Average severity			Number of injuries				Average severity			Number of injuries				Average severity		
	Fatal	Permanent		Temporary total	Permanent partial	Temporary total	All injuries	Fatal	Permanent		Temporary total	Permanent partial	Temporary total	All injuries	Fatal	Permanent		Temporary total	Permanent partial	Temporary total	All injuries
		Total	Partial						Total	Partial						Total	Partial				
UNDERGROUND MINES																					
Underground:																					
Falls of roof:																					
While mining	39		4	511	269	49	469	2		1	23	3,000	48	620	41		5	534	815	49	476
While loading	73	2	4	562	152	52	749	15	1		19		58	2,774	88	3	4	581	153	52	854
While testing or taking down roof	14	1	2	157	500	40	559	4			4		44	3,022	18	1	2	161	500	40	667
While setting or pulling timbers or props	24		3	220	2,342	52	658	4			19		75	1,106	28		3	239	2,342	54	696
While preparing or installing roof bolts	10	1	1	182	400	50	389								10	1	1	182	400	50	389
While moving machinery from one working place to another	3			54		46	359				2		27	27	3			56		45	348
While moving or placing cars in active working places				19		49	49											19		49	49
While moving, setting up, or operating continuous mining machines	10		1	23	500	71	1,828								10		1	23	500	71	1,828
All other	22	1	5	270	327	46	510	2			5		32	1,737	24	1	5	275	327	46	538
Falls of roof or face material from equipment knocking out support:																					
By shuttle cars or mobile electric trucks	1			12		51	508								1			12		51	508
By mine motors or cars	2			13		39	834								2			13		39	834
By machines	1			20		304	275								1			20		304	575
Falls of face or rib:																					
While mining	2		2	234	375	36	89	1			45		30	160	3		2	279	375	35	100
While loading				166		41	41				13		18	18				179		39	39
While testing or taking down roof				8		27	27	1						6,000	1			8		27	690
While setting or pulling timbers or props			1	28	120	65	67				20		53	53			1	48	120	60	61
While preparing or installing roof bolts				26		53	53											26		53	53
While moving machinery from one working place to another			1	9	3,000	33	330				3		14	14			1	12	3,000	28	257
While moving or placing cars in active working places				1		19	19											1		19	19
While moving, setting up, or operating a continuous mining machine			2	3	520	7	212										2	3	520	7	212
All other			1	57	340	42	47	1	1		12		71	918	1	1	1	69	340	47	217
Falls of roof or face material from pressure bumps or bursts	17		1	60	3,000	41	1,377				15		30	30	17		1	75	3,000	38	1,160
Rushes, rolls, or slides of coal or rock				23		33	33	1			79		30	105	1			102		31	89
Other falling materials or objects:																					
Props or timbers				95		24	24				16		27	27				111		24	24
Objects dropped or thrown by co-workers				24		21	21				3		19	19				27		21	21
Rolling, shifting, or sliding materials			3	168	57	26	27		1		45		22	152		1	3	213	57	25	53
All other				32		17	17				13		13	13				45		15	15
Slips or falls of persons:																					
On same level:																					
While escaping from another hazard			1	18	70	30	32				7		16	16			1	25	70	26	28
While handling materials				163		34	34				154		20	20				317		27	27
From hand tools slipping or breaking				21		10	10											21		10	10
While operating or moving machinery				53		43	43				21		18	18				74		36	36
All other				138		31	31				77		22	22				215		28	28
From an elevation:																					
While handling materials				22		22	22	1			31		20	207	1			53		21	132

TABLE 12.—*Number and average severity of injuries at coal mines in the United States, by kind of coal, principal injury agencies, general work location, and degree of injury, 1957*—Continued

Injury agency and general location	Bituminous-coal mines							Anthracite mines							All coal mines						
	Number of injuries				Average severity			Number of injuries				Average severity			Number of injuries				Average severity		
	Fatal	Permanent		Temporary total	Permanent partial	Temporary total	All injuries	Fatal	Permanent		Temporary total	Permanent partial	Temporary total	All injuries	Fatal	Permanent		Temporary total	Permanent partial	Temporary total	All injuries
		Total	Partial						Total	Partial						Total	Partial				
UNDERGROUND MINES—continued																					
Underground—Continued																					
Slips or falls of persons—Continued																					
From an elevation—Continued																					
While operating or moving machinery				5		16	16				2		23	23				7		18	18
Due to failure of scaffolds, ladders, etc				9		22	22				10		34	34				19		28	28
All other		1		37		23	180				15		26	26		1		52		24	136
Handling materials:																					
Props, ties, or timbers			5	745	135	26	27			2	220	80	24	25			7	965	119	26	26
Coal			3	374	250	25	27			3	229	233	30	32			6	603	242	27	29
Rock or slate			3	340	198	26	28			2	87	100	40	42			5	427	159	29	31
Rails			3	241	108	25	26			1	18	50	15	17			4	259	94	24	25
Wire or wire ropes				82		26	26											82		26	26
Roof-bolting materials				20		19	19											20		19	19
Handling, moving, or installing conveyor pans			8	174	142	22	27				29		34	34			8	203	142	23	28
Flying particles while loading car of coal, rock, or gob				27		11	11			2	31	195	9	20			2	58	195	10	16
Flying particles while handling all other materials				82		7	7			1	58	300	8	13			1	140	300	7	10
All other		1	14	541	182	26	41			1	52	50	19	20		1	15	593	173	25	39
Handtools:																					
Picks				47		7	7				11		9	9				58		8	8
Axes or hatchets			2	33	238	16	29				11		12	12			2	44	238	15	25
Hammer or sledges				35		14	14				7		13	13				42		14	14
Crowbars or bars			1	44	200	29	33				26		20	20			1	70	200	26	28
Shovels				9		11	11				1		3	3				10		10	10
Saws				19		14	14				2		9	9				21		13	13
Hand wrenches or other tools used to install roof bolts				10		23	23											10		23	23
All tools in hands of fellow workers				31		13	13				8		9	9				39		12	12
Flying particles from handtools or objects worked on			5	242	1,800	14	50				91		12	12			5	333	1,800	13	39
All other				90		13	13				14		7	7				104		13	13
Stepping or kneeling on sharp or loose objects:																					
Stepping on nails or other sharp objects				23		9	9				54		4	4				77		6	6
Stepping on loose objects				106		29	29				20		18	18				126		27	27
Knee or hand injuries while working on of fours				132		22	22				3		6	6				135		21	21
Striking or bumping against objects				87		20	20				10		8	8				97		19	19
Haulage:																					
Struck, run over, or squeezed between cars or motors:																					
Coupling or uncoupling			43	269	301	38	74				28		58	58			43	297	301	40	73
Switching, spragging, blocking, or braking			15	71	651	39	146			1	13	150	14	24			16	84	619	35	129
Pulling, pushing, or dropping				33		48	48				8		23	23				41		43	43
Operating or riding	6		5	62	1,332	57	633	1			2		60	2,040	7		5	64	1,332	58	689
All other			7	81	1,015	38	116	1			12			508	1		7	93	1,015	40	166

Squeezed between car or motor and rib, timber, or roof:																					
Coupling or uncoupling	1	-	-	30	-	47	239	-	-	-	2	-	60	60	1	-	-	32	-	48	**228**
Switching, spragging, blocking, or braking	-	-	2	39	225	55	64	-	-	1	3	600	15	161	-	-	3	42	350	52	**72**
Pulling, pushing, or dropping	-	-	1	24	400	26	41	1	-	-	3	-	24	1,518	1	-	1	27	400	26	**244**
Operating or riding	4	1	5	207	115	27	166	-	-	-	5	-	38	38	4	1	5	212	115	27	**163**
All other	3	-	3	40	347	41	449	-	-	1	5	300	90	125	3	-	4	45	335	46	**412**
Derailments	4	-	2	156	1,275	38	201	1	-	-	18	-	35	349	5	-	2	174	1,275	38	**216**
Rerailing cars or motors	3	-	14	198	284	38	137	-	-	-	12	-	16	16	3	-	14	210	284	37	**131**
Collisions (cars or motors under control)	3	-	3	67	2,200	41	374	-	-	-	3	-	190	190	3	-	3	70	2,200	47	**367**
Runaways (cars or motors not under control)	7	-	2	68	1,850	43	632	1	-	1	7	4,500	28	1,188	8	-	3	75	2,733	42	**690**
Falling, slipping, or jumping in or from cars or motors	3	-	1	211	60	50	133	-	-	-	19	-	58	58	3	-	1	230	60	51	**127**
Shuttle cars or mobile electric trucks:																					
Struck or run over	-	-	2	68	350	29	38	-	-	-	3	-	29	29	-	-	2	71	350	29	**38**
Squeezed between shuttle car or mobile electric truck and roof, rib, machine, etc	17	-	9	256	1,747	41	455	-	-	-	1	-	6	6	17	-	9	257	1,747	41	**453**
All other	-	-	1	162	200	24	25	-	-	-	2	-	6	6	-	-	1	164	200	24	**25**
Miscellaneous haulage:																					
Coupling or uncoupling (cars not moving)	-	-	-	31	-	24	24	-	-	1	4	100	18	34	-	-	1	35	100	23	**25**
Ropes or cables on haulage	1	-	3	72	1,400	145	177	-	-	-	9	-	42	42	1	-	3	81	1,400	44	**162**
Animals	-	-	1	9	75	25	30	-	-	-	1	-	1	1	-	-	1	10	75	22	**27**
Slips or strains from pulling, pushing, or dropping car by hand	-	-	-	85	-	28	28	-	-	-	38	-	17	17	-	-	-	123	-	25	**25**
Riding or getting on or off conveyor belts	-	-	-	98	-	21	21	-	-	-	-	-	-	-	-	-	-	98	-	21	**21**
Flying particles on haulage	-	-	1	55	75	6	6	-	-	-	3	-	3	3	-	-	1	58	75	6	**7**
All other	1	-	7	200	306	24	63	-	-	-	27	-	21	21	1	-	7	227	306	24	**58**
Explosions of gas or coal dust:																					
Matches, igniters, or smoking	4	-	-	-	-	-	6,000	-	-	-	-	-	-	-	4	-	-	-	-	-	**6,000**
Electric arc	54	-	-	10	-	63	5,072	-	-	-	1	-	88	88	54	-	-	11	-	65	**4,996**
Defective flame safety lamp	-	-	-	-	-	-	-	3	-	-	2	-	204	3,682	3	-	-	2	-	204	**3,682**
Blasting in nonpermissible manner	5	-	-	1	-	9	5,002	-	-	-	-	-	-	-	5	-	-	1	-	9	**5,002**
All other	-	-	-	-	-	-	-	-	-	-	3	-	23	23	-	-	-	3	-	23	**23**
Explosives and breaking agents:																					
Industrial explosives:																					
Premature shot or blast	1	-	2	4	1,050	26	1,172	-	-	-	1	-	80	80	1	-	2	5	1,050	37	**1,036**
Misfire or digging into unexploded holes	1	-	-	3	-	2	1,502	1	-	-	-	-	-	6,000	2	-	-	3	-	2	**2,401**
Shot breaking through rib or pillar	3	-	1	32	1,800	23	570	-	-	-	-	-	-	-	3	-	1	32	1,800	23	**570**
Flying fragments	-	1	-	84	-	28	98	2	-	-	1	-	25	4,008	2	1	-	85	-	28	**232**
Suffocation from explosives smoke	-	-	-	1	-	14	14	1	-	-	4	-	17	1,214	1	-	-	5	-	16	**1,014**
Insufficient warning or improper blasting lines	1	-	-	8	-	32	695	-	-	-	-	-	-	-	1	-	-	8	-	32	**695**
All other	-	-	-	16	-	33	33	-	-	-	4	-	34	34	-	-	-	20	-	33	**33**
Cardox	-	-	-	2	-	92	92	-	-	-	-	-	-	-	-	-	-	2	-	92	**92**
Airdox	1	-	1	34	1,500	22	229	-	-	-	-	-	-	-	1	-	1	34	1,500	22	**229**
Electricity (caused by current, including sparks or flashes):																					
Trolley wire or pole	2	-	-	64	-	10	191	-	-	-	4	-	6	6	2	-	-	68	-	10	**181**
Transformers, generators, etc	-	-	-	6	-	6	6	-	-	-	2	-	12	12	-	-	-	8	-	8	**8**
Other permanent or semipermanent lighting circuits	4	-	-	33	-	12	659	-	-	-	2	-	14	14	4	-	-	35	-	12	**626**
Locomotives or shuttle cars	1	-	-	21	-	11	283	-	-	-	8	-	21	21	1	-	-	29	-	14	**213**
Mining or loading machines	-	-	-	12	-	13	13	-	-	-	-	-	-	-	-	-	-	12	-	13	**13**
Cutout switches or junction boxes	-	-	-	26	-	15	15	1	-	-	3	-	8	1,506	1	-	-	29	-	14	**214**
Cable for mobile mining, loading, or haulage equipment	1	-	-	274	-	14	36	-	-	-	6	-	9	9	1	-	-	280	-	14	**35**
All other	3	-	1	64	100	16	281	-	-	-	1	-	1	1	3	-	1	65	100	15	**277**
Machinery:																					
While moving mining machines	3	-	13	196	323	48	150	-	-	-	-	-	-	-	3	-	13	196	323	48	**150**
While setting up mining machines	-	1	10	128	247	19	78	-	-	-	1	-	60	60	-	1	10	129	247	19	**78**
While operating mining machines	3	-	9	308	440	32	100	-	-	-	-	-	-	-	3	-	9	308	440	32	**100**
Belt conveyors	1	-	5	88	1,122	39	160	-	-	-	1	-	46	46	1	-	5	89	1,122	39	**159**
Chain, bucket, or shaker conveyors	-	-	8	74	308	24	51	-	-	-	10	-	32	32	-	-	8	84	308	24	**49**
Loading machines (including self-loading heads)	5	-	16	319	669	38	155	-	-	-	9	-	17	17	5	-	16	328	669	38	**152**
While moving loading machines or self-loading heads	-	-	6	74	549	41	79	-	-	-	5	-	21	21	-	-	6	79	549	40	**76**
Scraper conveyors	-	-	-	1	-	38	38	-	-	-	27	-	46	46	-	-	-	28	-	46	**46**

TABLE 12.—*Number and average severity of injuries at coal mines in the United States, by kind of coal, principal injury agencies, general work location, and degree of injury, 1957*—Continued

Injury agency and general location	Bituminous-coal mines							Anthracite mines							All coal mines						
	Number of injuries				Average severity			Number of injuries				Average severity			Number of injuries				Average severity		
	Fatal	Permanent		Temporary total	Permanent partial	Temporary total	All injuries	Fatal	Permanent		Temporary total	Permanent partial	Temporary total	All injuries	Fatal	Permanent		Temporary total	Permanent partial	Temporary total	All injuries
		Total	Partial						Total	Partial						Total	Partial				
UNDERGROUND MINES—continued																					
Underground—Continued																					
Machinery—Continued																					
Power drills (except for installing roof bolts)	1	------	3	300	300	29	51	------	------	------	49	------	38	38	1	------	3	349	300	30	49
Power drills (used for installing roof bolts)	------	------	4	75	112	32	36	------	------	------	------	------	------	------	------	------	4	75	112	32	36
Power equipment (except drills) used for installing roof bolts	------	------	3	55	100	22	26	------	------	------	2	------	17	17	------	------	3	57	100	21	25
While moving any machine except mining or loading machines	------	------	4	160	602	32	46	------	------	------	5	------	5	5	------	------	4	165	602	32	45
Flying particles set in motion by machinery (except roof-bolting equipment)	------	------	------	118	------	7	7	------	------	1	24	1,800	30	101	------	------	1	142	1,800	11	24
Flying particles set in motion by roof-bolting equipment	------	------	------	69	------	7	7	------	------	------	------	------	------	------	------	------	------	69	------	7	7
While moving, setting up, or operating continuous mining machines	2	------	4	43	300	43	307	------	------	------	------	------	------	------	2	------	4	43	300	43	307
All other	2	------	14	54	530	28	299	------	------	1	6	600	8	92	2	------	15	60	535	26	281
Suffocation (no flame or smoldering):																					
From natural mine gases	2	------	------	------	------	------	6,000	3	------	------	1	------	1	4,500	5	------	------	1	------	1	5,000
From foreign gases (gasoline fumes, etc.)	------	------	------	3	------	8	8	------	------	------	------	------	------	------	------	------	------	3	------	8	8
Mine fires and suffocation from fires:																					
Mine fires (coal or timber :																					
Initiated by all other causes	------	------	------	------	------	------	------	------	------	------	3	------	14	14	------	------	------	3	------	14	14
Other fires:																					
Equipment or material	2	------	------	22	------	16	514	------	------	------	1	------	23	23	2	------	------	23	------	16	495
Burning or exploding oil, gasoline, alcohol, or other flammable liquid	------	------	------	1	------	7	7	------	------	------	------	------	------	------	------	------	------	1	------	7	7
Miscellaneous causes:																					
Flying particles from draft or wind	------	------	------	7	------	10	10	------	------	------	8	------	6	6	------	------	------	15	------	8	8
Carbide (gas or burns from)	------	------	------	4	------	8	8	------	------	------	------	------	------	------	------	------	------	4	------	8	8
Acetylene or electric welding (burns, flashes, or flying particles)	------	------	------	15	------	12	12	------	------	------	1	------	10	10	------	------	------	16	------	12	12
Irritations and burns from battery fluid or other corrosive materials	------	------	------	48	------	20	20	------	------	------	7	------	27	27	------	------	------	55	------	21	21
Burns from steam, hot grease or oil, etc.	------	------	------	2	------	20	20	------	------	------	------	------	------	------	------	------	------	2	------	20	20
All other	------	1	------	323	------	33	52	------	------	------	9	------	32	32	------	1	------	332	------	33	51
Total, underground	373	11	307	12,751	542	32	215	48	3	20	2,074	645	26	174	421	14	327	14,825	548	32	209
Shaft and slope:																					
Falls of roof	1	------	------	1	------	7	3,004	------	------	------	------	------	------	------	1	------	------	1	------	7	3,004
Falls of roof from mine cars knocking out support	------	------	------	------	------	------	------	------	------	------	2	------	60	60	------	------	------	2	------	60	60
Falls of face while loading	------	------	------	------	------	------	------	------	------	------	1	------	8	8	------	------	------	1	------	8	8
Rushes, rolls, or slides of coal or rock	------	------	------	------	------	------	------	------	------	------	4	------	7	7	------	------	------	4	------	7	7
Falling materials or objects:																					
All other	------	------	------	1	------	1	1	------	------	------	3	------	21	21	------	------	------	4	------	16	16
Falls of persons:																					
On same level	------	------	------	2	------	8	8	------	------	------	9	------	13	13	------	------	------	11	------	12	12
Down shaft or slope	1	------	------	------	------	------	6,000	1	------	------	2	------	40	2,027	2	------	------	2	------	40	3,020
All other	------	------	------	2	------	14	14	------	------	------	2	------	22	22	------	------	------	4	------	18	18

Handling materials	------	------	------	6	------	28	28	------	------	------	14	------	16	16	------	------	------	20	------	19	19
Handtools	------	------	------	2	------	4	4	------	------	------	2	------	2	2	------	------	------	4	------	3	3
Stepping or kneeling on sharp or loose objects	------	------	------	------	------	------	------	------	------	------	3	------	2	2	------	------	------	3	------	2	2
Striking or bumping against objects	------	------	------	1	------	31	31	------	------	------	------	------	------	------	------	------	------	1	------	31	31
Haulage:																					
Struck, run over, or squeezed between cars or motors	------	------	1	2	400	44	163	------	------	2	10	68	35	40	------	------	3	12	178	37	65
Runaways (cars or motors not under control)	------	------	------	------	------	------	------	------	------	------	2	------	112	112	------	------	------	2	------	112	112
Persons caught or struck by ropes used for haulage	------	------	------	1	------	53	53	------	------	------	2	------	44	44	------	------	------	3	------	47	47
All other	------	------	------	4	------	26	26	------	------	------	23	------	25	25	------	------	------	27	------	25	25
Miscellaneous causes:																					
Inrush of water	------	------	------	------	------	------	------	------	------	------	5	------	1	1	------	------	------	5	------	1	1
All other	------	------	------	------	------	------	------	------	------	------	1	------	10	10	------	------	------	1	------	10	10
Total, shaft and slope	2	------	1	22	400	23	516	1	------	2	85	68	23	92	3	------	3	107	178	23	186
Surface:																					
Rushes, rolls, or slides of coal or rock	------	------	------	2	------	63	63	------	------	------	1	------	30	30	------	------	------	3	------	52	52
Falling materials or objects:																					
Rolling, shifting, or sliding material	------	------	------	20	------	21	21	------	------	------	1	------	269	269	------	------	------	21	------	33	33
All other	------	------	------	21	------	63	63	------	------	------	------	------	------	------	------	------	------	21	------	63	63
Slips or falls of persons:																					
On same level:																					
While handling materials	------	------	------	45	------	38	38	------	------	------	8	------	28	28	------	------	------	53	------	37	37
All other	------	------	1	93	75	29	29	------	------	------	13	------	24	24	------	------	1	106	75	28	28
From an elevation:																					
While handling materials	------	------	------	31	------	55	55	------	------	------	5	------	105	105	------	------	------	36	------	62	62
Due to failure of scaffolds, ladders, etc	------	------	------	14	------	83	83	------	------	------	------	------	------	------	------	------	------	14	------	83	83
All other	------	------	------	40	------	31	31	------	------	------	4	------	19	19	------	------	------	44	------	30	30
Handling materials:																					
Props, ties, or lumber	------	------	5	75	153	25	33	------	------	------	15	------	11	11	------	------	5	90	153	23	30
Coal	------	------	------	27	------	28	28	------	------	------	2	------	24	24	------	------	------	29	------	28	28
Rock or slate	------	------	1	51	200	30	33	------	------	------	1	------	6	6	------	------	1	52	200	29	33
Rails	------	------	------	20	------	32	32	------	------	------	1	------	3	3	------	------	------	21	------	31	31
All other	2	------	6	254	153	28	76	------	------	3	28	162	26	39	2	------	9	282	156	27	72
Handtools:																					
All handtools	------	------	1	70	60	20	20	------	------	------	8	------	28	28	------	------	1	78	60	20	21
Flying particles from handtools or objects worked on	------	------	2	40	1, 800	14	99	------	------	------	10	------	20	20	------	------	2	50	1, 800	16	84
Stepping or kneeling on sharp or loose objects	------	------	------	24	------	13	13	------	------	------	3	------	5	5	------	------	------	27	------	12	12
Striking or bumping against objects	------	------	------	9	------	13	13	------	------	------	------	------	------	------	------	------	------	9	------	13	13
Haulage:																					
Mine-gage haulage:																					
Struck, run over, or squeezed between rail equipment:																					
Coupling or uncoupling	------	------	7	30	654	39	155	------	------	------	2	------	60	60	------	------	7	32	654	40	150
Switching, spragging, blocking, or braking	------	------	1	9	600	30	87	------	------	------	------	------	------	------	------	------	1	9	600	30	87
Pulling, pushing, or dropping	------	------	------	9	------	37	37	------	------	------	1	------	10	10	------	------	------	10	------	34	34
Operating or riding	------	------	1	8	940	47	146	------	------	------	------	------	------	------	------	------	1	8	940	47	146
All other	1	------	------	10	------	20	564	------	------	------	1	------	25	25	1	------	------	11	------	20	519
Squeezed between rail equipment and construction:																					
Coupling and uncoupling	------	------	1	4	340	110	156	------	------	------	------	------	------	------	------	------	1	4	340	110	156
Switching, spragging, blocking, or braking	------	------	------	1	------	64	64	------	------	------	------	------	------	------	------	------	------	1	------	64	64
Operating or riding	------	------	2	8	670	19	150	------	------	------	------	------	------	------	------	------	2	8	670	19	150
Derailments	1	------	------	13	------	50	475	------	------	------	------	------	------	------	1	------	------	13	------	50	475
Rerailing cars or motors	------	------	3	17	333	21	68	------	------	------	1	------	16	16	------	------	3	18	333	21	65
Collisions (cars or trips under control)	------	------	------	3	------	15	15	------	------	------	1	------	16	16	------	------	------	4	------	16	16
Runaways (cars or trips not under control)	1	------	------	7	------	49	793	------	------	------	------	------	------	------	1	------	------	7	------	49	793
Falling, slipping, or jumping in or from rail equipment	------	------	1	31	4, 500	30	170	------	------	------	2	------	8	8	------	------	1	33	4, 500	29	160
Coupling or uncoupling (cars not moving)	------	------	------	3	------	17	17	------	------	------	1	------	7	7	------	------	------	4	------	14	14
Ropes or cables on haulage	------	------	2	10	300	30	75	------	------	------	3	------	6	6	------	------	2	13	300	24	61
Pulling, pushing, dropping cars by hand	------	------	------	16	------	33	33	------	------	------	1	------	12	12	------	------	------	17	------	31	31
All other	------	------	------	32	------	19	19	------	------	------	2	------	108	108	------	------	------	34	------	24	24

TABLE 12.—*Number and average severity of injuries at coal mines in the United States, by kind of coal, principal injury agencies, general work location, and degree of injury, 1957*—Continued

Injury agency and general location	Bituminous-coal mines							Anthracite mines							All coal mines						
	Number of injuries				Average severity			Number of injuries				Average severity			Number of injuries				Average severity		
	Fatal	Permanent		Temporary total	Permanent partial	Temporary total	All injuries	Fatal	Permanent		Temporary total	Permanent partial	Temporary total	All injuries	Fatal	Permanent		Temporary total	permanent partial	Temporary total	All injuries
		Total	Partial						Total	Partial						Total	Partial				
UNDERGROUND MINES—continued																					
Surface—Continued																					
Standard-gage haulage (railway)	2	1	4	166	1,242	31	163				15		35	35	2	1	4	181	1,242	32	152
Trucks, tractors, automobiles, etc	4		1	40	1,140	44	598				2		6	6	4		1	42	1,140	42	573
Falling trolley poles, etc			2	41	800	26	62				4		18	18			2	45	800	25	58
Explosions of gas or coal dust	1			2		218	2,145								1			2		218	2,145
Explosives and breaking agents:																					
Flying fragments set in motion by explosives or detonators				6		28	28											6		28	28
Electricity (caused by current, including sparks or flashes):																					
Transformers, generators, etc	2						6,000								2						6,000
Other permanent or semipermanent lighting circuits	2			8		21	1,217								2			8		21	1,217
All other				35		9	9				1		2	2				36		9	9
Machinery:																					
Belt conveyors	3		6	18	1,725	59	1,089								3		6	18	1,725	59	1,089
Chain, bucket, or shaker conveyors	1			7		35	781				1		3	3	1			8		31	694
Power shovels, draglines, bulldozers, etc	1		1	12	400	20	474								1		1	12	400	20	474
Stationary surface machinery	1		10	23	238	52	282				5		21	21	1		10	28	238	47	248
All other			6	55	269	28	52				1		71	71			6	56	269	29	52
Suffocation (no flames or smoldering)				1		262	262											1		262	262
Mine fires and suffocation from fires:																					
Other fires (electric cables, rags, etc.)				1		36	36											1		36	36
Burning or exploding oil, gasoline, alcohol or other flammable liquid				5		28	28											5		28	28
Miscellaneous causes:																					
Acetylene or electric welding (burns, flashes, or flying particles)				33		8	8				6		4	4				39		7	7
All other	5			75		19	392				7		22	22	5			82		19	363
Total, surface	27	1	64	1,575	656	30	154			3	157	162	27	30	27	1	67	1,732	634	30	143
Total, underground mines	402	12	372	14,348	561	32	208	49	3	25	2,316	541	26	161	451	15	397	16,664	560	31	202
STRIP MINES																					
Falls or slides of coal or overburden:																					
While mining	1			15		35	408				1		181	181	1			16		44	395
While loading	2			2		2	3,001								2			2		2	3,001
All other	1			10		36	578				1		108	108	1			11		42	539
Rushes, rolls, or slides of coal or rock				7		11	11				1		3	3				8		10	10
Other falling materials or objects			1	31	700	12	33				8		12	12			1	39	700	12	29
Slips or falls of persons:																					
On same level:																					
While handling materials				39		22	22				10		8	8				49		19	19
While operating or moving machinery				9		60	60				5		18	18				14		45	45
All other				33		20	20				10		23	23				43		21	21
From an elevation:																					
While handling materials	1			17		17	349				3		39	39	1			20		20	305
While operating or moving machinery			1	31	123	22	25										1	31	123	22	25
All other			1	45	4,500	21	118				7		18	18			1	52	4,500	21	105

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Handling materials:																					
Props, ties, or lumber				21		54	54				3		47	47				24		53	53
Coal, rock, or slate				31		24	24				9		32	32				40		26	26
All other	1		2	178	375	14	51			1	43	300	25	31	1		3	221	350	16	47
Handtools:																					
All hand tools				45		16	16				8		13	13				53		16	16
Flying particles from handtools or objects worked on			1	36	1,800	8	57				5		4	4			1	41	1,800	8	50
Stepping or kneeling on sharp or loose objects				25		16	16				7		16	16				32		16	16
Striking or bumping against objects				4		52	52											4		52	52
Haulage:																					
Mine-gage haulage				26		29	29				1		18	18				27		29	29
Standard-gage haulage (railway)	2			49		46	279				4		6	6	2			53		43	259
Trucks, tractors, automobiles, etc	6		2	85	200	34	423				47		34	34	6		2	132	200	34	292
Explosives:																					
Charging or tamping			1		1,800		1,800										1		1,800		1,800
All other				11		36	36				1		25	25				12		35	35
Electricity (caused by current, including sparks or flashes):																					
Power or lighting circuits	2			3		8	2,405								2			3		8	2,405
All other				5		10	10											5		10	10
Machinery:																					
Chain, bucket or shaker conveyor	1			3		10	1,507								1			3		10	1,507
Power drills			2	46	62	22	24				10		30	30			2	56	62	24	25
Power shovels, draglines, bulldozers, etc	4		10	111	646	28	268			1	22	400	28	44	4		11	133	624	28	234
Stationary surface machinery			1	4	4,500	74	959				2		23	23			1	6	4,500	57	692
All other			8	53	729	33	124				9		16	16			8	62	729	30	110
Mine fires and suffocation from fires:																					
Other fire (electric cables, rags, etc.)				2		19	19											2		19	19
Burning or exploding oil, gasoline, alcohol, or other flammable liquid	1			13		20	447				3		83	83	1			16		32	383
Miscellaneous causes:																					
Acetylene or electric welding (burns, flashes, or flying particles)				27		7	7				2		6	6				29		7	7
All other				60		23	23				8		27	27				68		24	24
Total, strip mines	22		30	1,077	900	24	164			2	230	350	26	29	22		32	1,307	865	24	141
AUGER MINES																					
Falls of face or rib:																					
While loading	1						6,000								1						6,000
All other				5		15	15											5		15	15
Slips or falls of persons:																					
On same level				2		6	6											2		6	6
From an elevation				1		8	8											1		8	8
Handling materials			1	16	300	9	26										1	16	300	9	26
Handtools			1	2	600	7	205										1	2	600	7	205
Haulage				12		42	42											12		42	42
Explosions of gas or coal dust:																					
Matches, igniters, or smoking	1			3		146	1,610								1			3		146	1,610
Machinery:																					
Power shovels, draglines, bulldozers, etc	1		1	4	30	21	1,019								1		1	4	30	21	1,019
All other				20		34	34											20		34	34
Miscellaneous causes:																					
All other				8		18	18											8		18	18
Total, auger	3		3	73	310	29	266								3		3	73	310	29	266
CULM BANKS																					
Rushes, rolls, or slides of coal or rock											1		3	3				1		3	3
Falling material or objects											2		21	21				2		21	21
Slips or falls of persons											13		17	17				13		17	17
Handling materials										2	18	103	32	39			2	18	103	32	39
Handtools											3		28	28				3		28	28
Haulage											17		30	30				17		30	30
Machinery											11		5	5				11		5	5
All other											4		20	20				4		20	20
Total, culm banks										2	69	103	23	25			2	69	103	23	25

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TABLE 12.—*Number and average severity of injuries at coal mines in the United States, by kind of coal, principal injury agencies, general work location, and degree of injury, 1957*—Continued

Injury agency and general location	Bituminous-coal mines							Anthracite mines							All coal mines						
	Number of injuries				Average severity			Number of injuries				Average severity			Number of injuries				Average severity		
	Fatal	Permanent		Temporary total	Permanent partial	Temporary total	All injuries	Fatal	Permanent		Temporary total	Permanent partial	Temporary total	All injuries	Fatal	Permanent		Temporary total	Permanent partial	Temporary total	All injuries
		Total	Partial						Total	Partial						Total	Partial				
DREDGES																					
All causes											4		18	18				4		18	18
Total, dredges											4		18	18				4		18	18
PREPARATION PLANTS																					
Rushes, rolls, or slides of coal or rock											1		166	166				1		166	166
Falling materials or objects											3		7	7				3		7	7
Slips or falls of persons											45		34	34				45		34	34
Handling materials:																					
Props, ties, or timbers								1			9		24	622	1			9		24	622
All other										2	56	240	20	28			2	56	240	20	28
Handtools										2	22	130	20	30			2	22	130	20	30
Haulage											36		17	17				36		17	17
Machinery:																					
Scraper conveyor								1		1		700		3,350	1		1		700		3,350
All other										1	19	150	15	22			1	19	150	15	22
Miscellaneous causes:																					
Acetylene or electric welding (burns, flashes, or flying particles)											13		7	7				13		7	7
All other											16		13	13				16		13	13
Total, preparation plants								2		6	220	265	21	80	2		6	220	265	21	80
Grand total	427	12	405	15,498	584	32	206	51	3	35	2,839	458	26	141	478	15	440	18,337	574	31	196

TABLE 13.—*Number of injuries, average severity, and injury rates at bituminous-coal mines in the United States, by part of body injured, 1957*

General location and part of body injured	Number of injuries						Distribution of all injuries, percent[1]	Average severity[2]			Time-loss rates[3] per million man-hours		Frequency rates[4] per million man-hours	
	Fatal	Nonfatal				All injuries		Permanent partial	Temporary total	All injuries	Fatal	Nonfatal	Fatal	Nonfatal
		Permanent		Temporary total	Total nonfatal									
		Total	Partial											
Underground mines:														
Underground (including shaft and slope):														
Head	49			663	663	712	5.6		21	433	1,145	55	0.19	2.58
Eye			7	825	832	832	6.6	1,800	9	24		79		3.24
Trunk	81	5	1	3,296	3,302	3,383	26.7	600	37	189	1,893	599	.32	12.86
Hernia				154	154	154	1.2		52	52		31		.60
Arm, including wrist			8	527	535	535	4.2	3,276	38	87		181		2.08
Hand and finger			249	2,196	2,445	2,445	19.3	272	25	50		476		9.52
Leg, including ankle		3	10	1,986	1,999	1,999	15.8	3,405	40	66		516		7.79
Foot and toe			32	1,409	1,441	1,441	11.4	776	33	49		277		5.61
Multiple	236	3	1	917	921	1,157	9.1	600	39	1,271	5,516	211	.92	3.59
Not stated	9			800	800	809			33	99	210	102	.04	3.12
Total	375	11	308	12,773	13,092	13,467		541	32	215	8,765	2,527	1.46	51.00
Surface:														
Head	4			62	62	66	4.2		18	381	403	19	.07	1.04
Eye			2	95	97	97	6.1	1,800	7	44		72		1.63
Trunk	3			434	434	437	27.6		29	70	303	214	.05	7.30
Hernia				40	40	40	2.5		54	54		36		.67
Arm, including wrist	1		2	91	93	94	5.9	4,050	45	194	101	206	.02	1.56
Hand and finger			57	271	328	328	20.7	321	26	78		428		5.51
Leg, including ankle	1		3	246	249	250	15.8	4,000	32	104	101	336	.02	4.19
Foot and toe				138	138	138	8.7		33	33		77		2.32
Multiple	18	1		112	113	131	8.3		38	902	1,816	172	.30	1.90
Not stated				86	86	86			24	24		34		1.45
Total	27	1	64	1,575	1,640	1,667		656	30	154	2,723	1,595	.45	27.57
Total, underground mines	402	12	372	14,348	14,732	15,134		561	32	208	7,628	2,352	1.27	46.59
Strip mines:														
Head	6			62	62	68	6.4		20	548	794	28	.13	1.37
Eye			2	72	74	74	7.0	1,800	6	55		90		1.63
Trunk	4		1	292	293	297	27.9	123	21	102	529	138	.09	6.46
Hernia				21	21	21	2.0		50	50		23		.46
Arm, including wrist			1	71	72	72	6.8	4,500	33	95		150		1.59
Hand and finger			21	143	164	164	15.4	487	20	80		289		3.62
Leg, including ankle			1	170	171	171	16.1	4,500	31	57		216		3.77
Foot and toe			4	99	103	103	9.7	1,012	22	61		138		2.27
Multiple	12			82	82	94	8.8		29	791	1,587	52	.26	1.81
Not stated				65	65	65			27	27		39		1.43
Total	22		30	1,077	1,107	1,129		900	24	164	2,910	1,164	.48	24.41
Auger mines:														
Head														
Eye			1	5	6	6	9.8	600	8	107		272		2.54
Trunk	1			12	12	13	21.3		21	481	2,544	109	.42	5.09
Hernia														
Arm, including wrist				5	5	5	8.2		67	67		143		2.12
Hand and finger			2	11	13	13	21.3	165	20	42		234		5.51
Leg, including ankle				7	7	7	11.5		14	14		40		2.97
Foot and toe				8	8	8	13.1		41	41		140		3.39
Multiple	2			7	7	9	14.8		76	1,392	5,087	226	.85	2.97
Not stated				18	18	18			16	16		125		7.63
Total	3		3	73	76	79		310	29	266	7,631	1,288	1.27	32.22
Grand total	427	12	405	15,498	15,915	16,342		584	32	206	7,040	2,197	1.17	43.74

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[1] All percentages are calculated separately, and total percentages may differ slightly from the sums of the component percentages. Number of injuries for which part of body injured was not stated are excluded in calculating percentages. For underground injuries, 100 percent represents a total of 12,658 injuries; for surface, 100 percent represents a total of 1,581 injuries; for strip mines, 100 percent represents a total of 1,064 injuries; and for auger mines, 100 percent represents a total of 61 injuries for which part of body was stated.

[2] A standard time-loss charge of 6,000 days is made against all fatal and permanent total injuries.

[3] Number of days charged per million man-hours.

[4] Number of injuries per million man-hours.

TABLE 14.—*Number of injuries, average severity, and injury rates at Pennsylvania anthracite mines, by part of body injured, 1957*

General location and part of body injured	Number of injuries						Distribution of all injuries, percent[1]	Average severity[2]			Time-loss rates[3] per million man-hours		Frequency rates[4] per million man-hours	
	Fatal	Nonfatal				All injuries		Permanent partial	Temporary total	All injuries				
		Permanent		Temporary total	Total nonfatal									
		Total	Partial								Fatal	Nonfatal	Fatal	Nonfatal
Underground mines:														
Underground (including shaft and slope):														
Head	11			162	162	173	7.9		11	392	2,760	76	0.46	6.77
Eye	1		1	217	218	219	10.0	1,800	12	48	251	186	.04	9.12
Trunk	9	2		449	451	460	20.9		27	169	2,258	1,002	.38	18.86
Hernia				15	15	15	.7		58	58		37		.63
Arm, including wrist				128	128	128	5.8		23	23		122		5.35
Hand and finger			18	427	445	445	20.3	199	22	29		537		18.61
Leg, including ankle			2	318	320	320	14.6	3,750	46	70		931		13.38
Foot and toe			1	261	262	262	11.9	150	21	22		238		10.96
Multiple	26	1		148	149	175	8.0		40	960	6,523	501	1.09	6.23
Not stated	2			34	34	36			26	358	502	36	.08	1.42
Total	49	3	22	2,159	2,184	2,233		592	26	171	12,293	3,665	2.05	91.32
Surface (including culm banks, dredges and preparation plants):														
Head				23	23	23	5.1		14	14		24		1.68
Eye				41	41	41	9.1		10	10		30		2.99
Trunk				108	108	108	23.9		22	22		170		7.88
Hernia				15	15	15	3.3		55	55		60		1.09
Arm, including wrist				28	28	28	6.2		36	37		74		2.04
Hand and finger			10	79	89	89	19.7	195	17	37		241		6.50
Leg, including ankle				68	68	68	15.1		30	30		149		4.96
Foot and toe			1	53	54	54	12.0	335	23	28		112		3.94
Multiple	2			23	23	25	5.5		34	512	876	58	.14	1.68
Not stated				12	12	12			24	24		22		.88
Total	2		11	450	461	463		207	24	54	876	940	.14	33.65
Total, underground mines	51	3	33	2,609	2,645	2,696		464	26	151	8,135	2,672	1.36	70.32
Strip mines:														
Head				13	13	13	5.8		28	28		54		1.94
Eye				12	12	12	5.3		5	5		9		1.79
Trunk				61	61	61	27.1		19	19		177		9.11
Hernia				6	6	6	2.7		64	64		58		.90
Arm, including wrist				17	17	17	7.6		47	47		120		2.54
Hand and finger			2	30	32	32	14.2	350	28	48		231		4.78
Leg, including ankle				47	47	47	20.9		20	20		143		7.02
Foot and toe				24	24	24	10.7		23	23		84		3.58
Multiple				13	13	13	5.8		46	46		90		1.94
Not stated				7	7	7			34	34		36		1.05
Total			2	230	232	232		350	26	29		1,002		34.65
Grand total	51	3	35	2,839	2,877	2,928		458	26	141	6,906	2,420	1.15	64.93

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[1] All percentages are calculated separately, and total percentages may differ slightly from the sums of the component percentages. Number of injuries for which part of body injured was not stated are excluded in calculating percentages. For underground injuries, 100 percent represents a total of 2,197 injuries; for surface, 100 percent represents a total of 451 injuries; and for strip mines, 100 percent represents a total of 225 injuries for which part of body was stated.

[2] A standard time-loss charge of 6,000 days is made against all fatal and permanent total injuries.

[3] Number of days charged per million man-hours.

[4] Number of injuries per million man-hours.

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TABLE 15.—*Number of injuries, average severity, and injury rates at bituminous-coal mines (underground and surface works) in the United States, by percentage groups of coal loaded mechanically and part of body injured, 1957*

Coal loaded mechanically, by percentage groups and part of body injured	Number of injuries						Distribution of all injuries, per cent [1]	Average severity [2]			Time-loss rates [3] per million man-hours		Frequency rates [4] per million man-hours	
	Fatal	Nonfatal				All injuries		Permanent partial	Temporary total	All injuries				
		Permanent		Temporary total	Total nonfatal						Fatal	Nonfatal	Fatal	Nonfatal
		Total	Partial											
All hand loading:														
Head	8	------	------	63	63	71	5.3	------	22	695	1,250	36	0.21	1.64
Eye	------	------	1	59	60	60	4.5	1,800	12	42	------	66	------	1.56
Trunk	13	------	------	337	337	350	26.0	------	47	268	2,032	417	.34	8.78
Hernia	------	------	------	12	12	12	.9	------	59	59	------	18	------	.31
Arm, including wrist	------	------	------	58	58	58	4.3	------	29	29	------	44	------	1.51
Hand and finger	------	------	34	271	305	305	22.6	337	29	64	------	505	------	7.95
Leg, including ankle	1	------	------	243	243	244	18.1	------	38	63	156	243	.03	6.33
Foot and toe	------	------	------	127	127	127	9.4	------	34	34	------	114	------	3.31
Multiple	40	------	------	80	80	120	8.9	------	51	2,034	6,253	106	1.04	2.08
Not stated	1	------	------	492	492	493	------	------	31	44	156	403	.03	12.82
Total	63	------	35	1,742	1,777	1,840	------	379	35	246	9,848	1,952	1.64	46.30
1 to 19 percent:														
Head	2	------	------	8	8	10	5.0	------	20	1,216	4,790	63	.80	3.19
Eye	------	------	------	13	13	13	6.6	------	8	8	------	40	------	5.19
Trunk	1	------	------	70	70	71	35.8	------	37	121	2,395	1,045	.40	27.94
Hernia	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Arm, including wrist	------	------	------	11	11	11	5.6	------	26	26	------	113	------	4.39
Hand and finger	------	------	2	38	40	40	20.2	720	27	62	------	989	------	15.97
Leg, including ankle	------	------	------	23	23	23	11.6	------	74	74	------	676	------	9.18
Foot and toe	------	------	------	20	20	20	10.1	------	26	26	------	210	------	7.98
Multiple	------	------	1	9	10	10	5.1	600	18	76	------	306	------	3.99
Not stated	------	------	------	10	10	10	------	------	32	32	------	127	------	3.99
Total	3	------	3	202	205	208	------	680	34	130	7,186	3,570	1.20	81.84
20 to 39 percent:														
Head	------	------	------	4	4	4	4.3	------	11	11	------	29	------	2.66
Eye	------	------	------	6	6	6	6.5	------	12	12	------	50	------	3.99
Trunk	------	------	------	28	28	28	30.4	------	24	24	------	446	------	18.63
Hernia	------	------	------	2	2	2	2.2	------	14	14	------	19	------	1.33
Arm, including wrist	------	------	------	1	1	1	1.1	------	60	60	------	40	------	.66
Hand and finger	------	------	1	19	20	20	21.7	175	22	30	------	393	------	13.31
Leg, including ankle	------	------	------	14	14	14	15.2	------	50	50	------	463	------	9.32
Foot and toe	------	------	------	12	12	12	13.0	------	51	51	------	409	------	7.99
Multiple	------	------	------	5	5	5	5.4	------	31	31	------	104	------	3.33
Not stated	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Total	------	------	1	91	92	92	------	175	30	32	------	1,954	------	61.23
40 to 59 percent:														
Head	------	------	------	15	15	15	6.8	------	15	15	------	87	------	5.62
Eye	------	------	------	11	11	11	5.0	------	10	10	------	42	------	4.12
Trunk	------	------	------	62	62	62	27.9	------	28	28	------	642	------	23.21
Hernia	------	------	------	2	2	2	.9	------	30	30	------	22	------	.75
Arm, including wrist	------	------	------	6	6	6	2.7	------	108	108	------	242	------	2.25
Hand and finger	------	------	6	49	55	55	24.8	292	25	54	------	1,119	------	20.59
Leg, including ankle	------	1	------	33	34	34	15.3	------	38	214	------	2,721	------	12.73
Foot and toe	------	------	------	17	17	17	7.6	------	54	54	------	345	------	6.36
Multiple	3	------	------	17	17	20	9.0	------	31	927	6,739	210	1.12	6.36
Not stated	------	------	------	5	5	5	------	------	27	27	------	50	------	1.87
Total	3	1	6	217	224	227	------	292	32	144	6,739	5,469	1.12	83.86

See footnotes at end of table.

TABLE 15.—*Number of injuries, average severity, and injury rates at bituminous-coal mines (underground and surface works) in the United States, by percentage groups of coal loaded mechanically and part of body injured, 1957*—Continued

Coal loaded mechanically, by percentage groups and part of body injured	Number of injuries						Distribution of all injuries, percent [1]	Average severity [2]			Time-loss rates [3] per million man-hours		Frequency rates [4] per million man-hours	
	Fatal	Nonfatal				All injuries		Permanent partial	Temporary total	All injuries				
		Permanent		Temporary total	Total nonfatal									
		Total	Partial								Fatal	Nonfatal	Fatal	Nonfatal
60 to 79 percent:														
Head				8	8	8	3.4		48	48		149		3.07
Eye			1	16	17	17	7.3	1,800	12	117		764		6.53
Trunk				58	58	58	24.8		42	42		943		22.29
Hernia				5	5	5	2.1		61	61		118		1.92
Arm, including wrist				8	8	8	3.4		44	44		134		3.07
Hand and finger			3	52	55	55	23.5	167	20	28		590		21.13
Leg, including ankle				34	34	34	14.5		44	44		577		13.06
Foot and toe				29	29	29	12.4		35	35		390		11.14
Multiple	1			19	19	20	8.5		50	348	2,306	368	.38	7.30
Not stated				1	1	1			9	9		3		.38
Total	1		4	230	234	235		575	36	70	2,306	4,036	.38	89.92
80 to 99 percent:														
Head	2			16	16	18	5.8		19	684	1,840	47	.31	2.45
Eye			1	24	25	25	8.0	1,800	11	83		318		3.83
Trunk	5			74	74	79	25.3		41	418	4,599	462	.77	11.34
Hernia				4	4	4	1.3		28	28		17		.61
Arm, including wrist			1	13	14	14	4.5	3,600	25	280		602		2.15
Hand and finger			9	40	49	49	15.7	328	33	87		653		7.51
Leg, including ankle				60	60	60	19.2		49	49		450		9.20
Foot and toe			1	38	39	39	12.5	2,400	23	84		504		5.98
Multiple	1			23	23	24	7.7		37	285	920	130	.15	3.53
Not stated	1			2	2	3			11	2,007	920	3	.15	.31
Total	9		12	294	306	315		896	34	237	8,279	3,186	1.38	46.91
100 percent:														
Head	32			524	524	556	5.6		20	364	935	50	0.16	2.55
Eye			1	687	688	688	6.9	1,800	8	11		37		3.35
Trunk	58	3	1	2,604	2,608	2,666	26.9	600	35	172	1,694	533	2.8	12.70
Hernia				147	147	147	1.5		54	54		39		.72
Arm, including wrist	1		8	420	428	429	4.3	3,389	40	117	29	215	(5)	2.08
Hand and finger			182	1,648	1,830	1,830	18.4	238	24	45		403		8.91
Leg, including ankle		2	9	1,571	1,582	1,582	15.9	3,833	38	67		516		7.70
Foot and toe			29	1,118	1,147	1,147	11.6	686	32	49		274		5.58
Mutilple	143	2		736	738	881	8.9		39	1,020	4,177	198	.70	3.59
Not stated	4			44	44	48			30	527	117	6	.02	.21
Total	238	7	230	9,499	9,736	9,974		553	31	190	6,952	2,270	1.16	47.40
Not stated:														
Head	9			84	84	93	5.1		30	607	1,078	50	.18	1.68
Eye			5	100	105	105	5.7	1,800	10	95		199		2.10
Trunk	7	2		471	473	480	26.2		38	150	838	595	.14	9.44
Hernia				22	22	22	1.2		42	42		18		.44
Arm, including wrist			1	96	97	97	5.3	3,600	39	76		147		1.94
Hand and finger			64	341	405	405	22.1	354	26	78		630		8.08
Leg, including ankle			4	246	250	250	13.7	2,888	45	91		453		4.99
Foot and toe			2	178	180	180	9.8	1,275	32	45		163		3.59
Multiple	62	2		133	135	197	10.8		32	1,970	7,424	323	1.24	2.69
Not stated	3			325	325	328			34	88	359	219	.06	6.48
Total	81	4	76	1,996	2,076	2,157		649	33	290	9,698	2,798	1.62	41.43
Surface [6]	4		5	77	82	86	100.0	368	34	330	3,707	684	.62	12.66
Grand total	402	12	372	14,348	14,732	15,134		561	32	208	7,628	2,352	1.27	46.59

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[1] All percentages are calculated separately, and the total percentages may differ slightly from the sums of the component percentages. Number of injuries for which part of body injured was not stated are excluded in calculating percentages. For all hand-loading injuries, 100 percent represents a total of 1,347 injuries; for 1 to 19 percent mechanical-loading injuries, 100 percent represents a total of 198 injuries; for 20 to 39 percent mechanical-loading injuries, 100 percent represents a total of 92 injuries; for 40 to 59 percent mechanical-loading injuries, 100 percent represents a total of 222 injuries; for 60 to 79 percent mechanical-loading injuries, 100 percent represents a total of 234 injuries; for 80 to 99 percent mechanical-loading injuries, 100 percent represents a total of 312 injuries; for 100 percent mechanical-loading injuries, 100 percent represents a total of 9,926 injuries; and for the group not stating the percent of mechanization, 100 percent represents a total of 1,829 injuries.

[2] A standard time-loss charge of 6,000 days is made against all fatal and permanent total injuries.

[3] Number of days charged per million man-hours.

[4] Number of injuries per million man-hours.

[5] Less than 0.005.

[6] Data on 75 surface installations (preparation plants and general repair shops) that could not be assigned to any single underground mine.

TABLE 16.—*Number of injuries, average severity, and injury rates at Pennsylvania anthracite mines (underground and surface works), by percentage groups of coal loaded mechanically and part of body injured, 1957*

Coal loaded mechanically, by percentage groups and part of body injured	Number of injuries						Distribution of all injuries, per cent [1]	Average severity [2]			Time-loss rates [3] per million man-hours		Frequency rates [4] per million man-hours	
	Fatal	Nonfatal				All injuries		Permanent partial	Temporary total	All injuries				
		Permanent		Temporary total	Total nonfatal									
		Total	Partial								Fatal	Nonfatal	Fatal	Nonfatal
All hand loading:														
Head	------	------	------	13	13	13	10.5	------	18	18	------	89	------	4.98
Eye	------	------	------	11	11	11	8.9	------	18	18	------	78	------	4.21
Trunk	1	------	------	27	27	28	22.6	------	37	250	2,298	380	0.38	10.34
Hernia	------	------	------	2	2	2	1.6	------	65	65	------	50	------	.76
Arm, including wrist	------	------	------	6	6	6	4.8	------	24	24	------	56	------	2.30
Hand and finger	------	------	1	19	20	20	16.1	50	34	35	------	270	------	7.66
Leg, including ankle	------	------	------	18	18	18	14.5	------	51	51	------	350	------	6.89
Foot and toe	------	------	------	12	12	12	9.7	------	18	18	------	83	------	4.60
Multiple	3	------	------	11	11	14	11.3	------	28	1,308	6,894	119	1.15	4.21
Not stated	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Total	4	------	1	119	120	124	------	50	32	225	9,192	1,476	1.53	45.96
1 to 10 percent:														
Head	3	------	------	25	25	28	12.3	------	7	649	6,729	68	1.12	9.35
Eye	------	------	------	19	19	19	8.4	------	8	8	------	56	------	7.10
Trunk	------	------	------	60	60	60	26.4	------	44	44	------	980	------	22.43
Hernia	------	------	------	1	1	1	0.4	------	95	95	------	36	------	.37
Arm, including wrist	------	------	------	9	9	9	4.0	------	44	44	------	148	------	3.36
Hand and finger	------	------	2	32	34	34	15.0	62	21	23	------	295	------	12.71
Leg, including ankle	------	------	------	33	33	33	14.5	------	34	34	------	424	------	12.34
Foot and toe	------	------	1	29	30	30	13.2	335	18	29	------	321	------	11.22
Multiple	1	------	------	12	12	13	5.7	------	59	516	2,243	264	.37	4.49
Not stated	1	------	------	1	1	2	------	------	76	3,038	2,243	28	.37	.37
Total	5	------	3	221	224	229	------	153	30	162	11,215	2,620	1.87	83.74
20 to 39 percent:														
Head	------	------	------	2	2	2	13.3	------	1	1	------	14	------	13.65
Eye	------	------	------	2	2	2	13.3	------	6	6	------	75	------	13.65
Trunk	------	------	------	3	3	3	20.0	------	32	32	------	648	------	20.47
Hernia	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Arm, including wrist	------	------	------	1	1	1	6.7	------	3	3	------	20	------	6.82
Hand and finger	------	------	------	4	4	4	26.7	------	15	15	------	403	------	27.30
Leg, including ankle	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Foot and toe	------	------	------	2	2	2	13.3	------	10	10	------	130	------	13.65
Multiple	------	------	------	1	1	1	6.7	------	148	148	------	1,010	------	6.82
Not stated	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Total	------	------	------	15	15	15	------	------	22	22	------	2,300	------	102.36
40 to 59 percent:														
Head	1	------	------	27	27	28	10.0	------	8	222	2,367	87	0.39	10.65
Eye	------	------	------	25	25	25	8.9	------	49	49	------	485	------	9.86
Trunk	2	------	------	69	69	71	25.3	------	23	192	4,733	639	.79	27.22
Hernia	------	------	------	5	5	5	1.8	------	80	80	------	157	------	1.97
Arm, including wrist	------	------	------	8	8	8	2.8	------	4	4	------	14	------	3.16
Hand and finger	------	------	1	41	42	42	14.9	60	22	23	------	386	------	16.57
Leg, including ankle	------	------	------	41	41	41	14.6	------	50	50	------	809	------	16.17
Foot and toe	------	------	------	37	37	37	13.2	------	21	21	------	309	------	14.59
Multiple	2	------	------	22	22	24	8.5	------	34	532	4,733	298	.79	8.68
Not stated	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Total	5	------	1	275	276	281	------	60	29	135	11,833	3,184	1.97	108.86

See footnotes at end of table.

TABLE 16.—*Number of injuries, average severity, and injury rates at Pennsylvania anthracite mines (underground and surface works), by percentage groups of coal loaded mechanically and part of body injured, 1957*—Continued

Coal loaded mechanically, by percentage groups and part of body injured	Number of injuries						Distribution of all injuries, per cent [1]	Average severity [2]			Time-loss rates [3] per million man-hours		Frequency rates [4] per million man-hours	
	Fatal	Nonfatal				All injuries		Permanent partial	Temporary total	All injuries	Fatal	Nonfatal	Fatal	Nonfatal
		Permanent		Temporary total	Total nonfatal									
		Total	Partial											
60 to 79 percent:														
Head	1	------	------	4	4	5	11. 1	------	17	1, 213	7, 284	81	1. 21	4. 86
Eye	------	------	------	2	2	2	4. 4	------	7	7	------	17	------	2. 43
Trunk	2	------	------	6	6	8	17. 8	------	14	1, 510	14, 569	98	2. 43	7. 28
Hernia	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Arm, including wrist	------	------	------	3	3	3	6. 7	------	3	3	------	11	------	3. 64
Hand and finger	------	------	2	12	14	14	31. 1	125	19	34	------	580	------	17. 00
Leg, including ankle	------	------	------	8	8	8	17. 8	------	36	36	------	351	------	9. 71
Foot and toe	------	------	------	3	3	3	6. 7	------	118	118	------	428	------	3. 64
Multiple	2	------	------	------	------	2	4. 4	------	------	6. 000	14, 569	------	2. 43	------
Not stated	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Total	5	------	2	38	40	45	------	125	27	695	36, 422	1, 567	6. 07	48. 56
80 to 99 percent:														
Head	1	------	------	20	20	21	5. 2	------	12	297	1, 118	43	. 19	3. 73
Eye	------	------	1	39	40	40	10. 0	1, 800	6	51	------	382	------	7. 46
Trunk	------	1	------	52	53	53	13. 2	------	22	135	------	1, 332	------	9. 88
Hernia	------	------	------	3	3	3	0. 7	------	39	39	------	22	------	. 56
Arm, including wrist	------	------	------	39	39	39	9. 7	------	28	28	------	204	------	7. 27
Hand and finger	------	------	6	90	96	96	23. 9	358	22	43	------	763	------	17. 89
Leg, including ankle	------	------	------	74	74	74	18. 5	------	58	58	------	795	------	13. 79
Foot and toe	------	------	------	48	48	48	12. 0	------	25	25	------	222	------	8. 95
Multiple	1	1	------	25	26	27	6. 7	------	58	498	1, 118	1, 390	. 19	4. 85
Not stated	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Total	2	2	7	390	399	401	------	564	30	99	2, 237	5, 155	. 37	74. 37
100 percent:														
Head	1	------	------	14	14	15	7. 9	------	10	409	4, 188	93	0. 70	9. 77
Eye	------	------	------	17	17	17	9. 0	------	9	9	------	102	------	11. 86
Trunk	1	------	------	39	39	40	21. 2	------	27	177	4, 188	746	. 70	27. 22
Hernia	------	------	------	2	2	2	1. 1	------	34	34	------	48	------	1. 40
Arm, including wrist	------	------	------	12	12	12	6. 3	------	22	22	------	188	------	8. 38
Hand and finger	------	------	1	43	44	44	23. 3	100	20	22	------	680	------	30. 71
Leg, including ankle	------	------	------	26	26	26	13. 8	------	44	44	------	801	------	18. 15
Foot and toe	------	------	------	18	18	18	9. 5	------	10	10	------	130	------	12. 56
Multiple	5	------	------	10	10	15	7. 9	------	35	2, 023	20, 938	242	3. 49	6. 98
Not stated	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Total	7	------	1	181	182	189	------	100	23	245	29, 313	3, 032	4. 89	127. 02
Not stated:														
Head	4	------	------	64	64	68	6. 5	------	13	365	1, 683	57	. 28	4. 49
Eye	1	------	------	109	109	110	10. 5	------	8	62	421	58	. 07	7. 64
Trunk	3	1	------	223	224	227	21. 8	------	23	128	1, 262	783	. 21	15. 71
Hernia	------	------	------	4	4	4	. 4	------	32	32	------	9	------	. 28
Arm, including wrist	------	------	------	59	59	59	5. 7	------	24	24	------	98	------	4. 14
Hand and finger	------	------	6	215	221	221	21. 2	154	21	24	------	377	------	15. 50
Leg, including ankle	------	------	2	139	141	141	13. 5	3, 750	40	93	------	918	------	9. 89
Foot and toe	------	------	1	127	128	128	12. 3	150	20	21	------	188	------	8. 98
Multiple	12	------	------	73	73	85	8. 1	------	37	879	5, 049	189	. 84	5. 12
Not stated	1	------	------	44	44	45	------	------	25	157	421	76	. 07	3. 08
Total	21	1	9	1, 057	1, 067	1, 088	------	953	23	152	8, 836	2, 752	1. 47	74. 82
Surface [5]	------	------	1	20	21	21	------	75	25	27	------	694	------	25. 32
Grand total	49	3	25	2, 316	2, 344	2, 393	------	541	26	161	9, 583	3, 011	1. 60	76. 40

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[1] All percentages are calculated separately, and total percentages may differ slightly from the sums of the component percentages. Number of injuries for which part of body injured was not stated are excluded in calculating percentages. For all hand-loading injuries, 100 percent represents a total of 124 injuries; for 1–19 percent mechanical-loading injuries, 100 percent represents a total of 227 injuries; for 20–39 percent mechanical-loading injuries, 100 percent represents a total of 15 injuries; for 40–59 percent mechanical-loading injuries, 100 percent represents a total of 281 injuries; for 60–79 percent mechanical-loading injuries, 100 percent represents a total of 45 injuries; for 80–99 percent mechanical-loading injuries, 100 percent represents a total of 401 injuries; for 109 percent mechanical-loading injuries, 100 percent represents a total of 180 injuries; and for the group not stating the percent of mechanization, 100 percent represents a total of 1,043 injuries.

[2] A standard time-loss charge of 6,000 days is made against all fatal and permanent total injuries.

[3] Number of days charged per million man-hours.

[4] Number of injuries per million man-hours.

[5] Data on 10 surface installation (general repair shops) that could not be assigned to any single underground mine.

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TABLE 17.—*Closed cases*[1] *of temporary total injuries for which company reported days of disability at bituminous-coal mines in the United States, by days of disability per injury and general work location, 1957*

Days of disability per injury	Number of temporary total injuries					
	Underground mines			Strip mines	Auger mines	Total
	Underground	Surface	Total			
1	625	96	721	89	5	815
2	386	59	445	62	4	511
3	552	89	641	78	2	721
4	569	77	646	61	4	711
5	544	68	612	47	2	661
6	498	54	552	59	3	614
7	298	40	338	41	1	380
8	164	27	191	25	1	217
9	281	25	306	33	2	341
10	299	38	337	18	2	357
11	306	33	339	18	1	358
12	266	23	289	23	3	315
13	307	38	345	16	1	362
14	185	29	214	6	2	222
15	101	13	114	13		127
16	167	19	186	15		201
17	180	29	209	10	1	220
18	196	24	220	7	1	228
19	162	17	179	15		194
20	185	21	206	14		220
21	111	6	117	3		120
22	73	11	84	7		91
23	113	13	126	8	1	135
24	127	12	139	2		141
25	113	11	124	6		130
26	120	11	131	8	1	140
27	121	17	138	3		141
28	85	14	99	4		103
29	52	5	57	2		59
30	82	15	97	7	1	105
31	84	9	93	3		96
32	166	7	173	9	1	183
33	86	8	94	8	1	103
34	113	14	127	3		130
35	54	7	61	3		64
36	28	8	36	9		45
37	64	10	74	3	1	78
38	66	11	77	1		78
39	61	9	70	2	2	74
40	71	6	77	3		80
41	60	8	68	3		71
42	42	4	46	3		49
43	35	6	41	5		46
44	54	9	63	5	1	69
45	51	7	58	4		62
46 to 60	634	67	701	42	5	748
61 to 90	640	83	723	46	2	771
91 to 120	247	36	283	17		300
121 to 150	152	17	169	9		178
151 or more	358	40	398	20	3	421
Total	10, 334	1, 300	11, 634	898	54	12, 586

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[1] In addition to the temporary total injuries for which companies reported days of disability, there were 2,912 temporary total injuries for which days of disability were not reported. To obtain total severity data for the industry, these "open cases" were closed by assigning average days of disability by classification.

TABLE 18.—*Closed cases*[1] *of temporary total injuries for which company reported days of disability at Pennsylvania anthracite mines, by days of disability per injury and general work location, 1957*

Days of disability per injury	Number of temporary total injuries				
	Underground mines			Strip mines	Total
	Underground	Surface	Total		
1	128	30	158	9	167
2	129	32	161	16	177
3	170	36	206	13	219
4	174	32	206	17	223
5	143	24	167	15	182
6	166	27	193	7	200
7	64	15	79	7	86
8	24	6	30	7	37
9	61	17	78	10	88
10	47	7	54	4	58
11	66	6	72	6	78
12	53	10	63	4	67
13	45	15	60	9	69
14	19	2	21	3	24
15	11	----------	11	2	13
16	15	4	19	2	21
17	22	2	24	3	27
18	23	4	27	2	29
19	30	6	36	2	38
20	33	10	43	2	45
21	11	5	16	2	18
22	15	2	17	----------	17
23	30	5	35	----------	35
24	13	2	15	1	16
25	18	2	20	4	24
26	31	2	33	3	36
27	28	3	31	1	32
28	12	1	13	1	14
29	7	1	8	1	9
30	19	1	20	1	21
31	8	7	15	----------	15
32	14	5	19	1	20
33	6	4	10	3	13
34	17	1	18	2	20
35	7	1	8	1	9
36	5	1	6	1	7
37	7	4	11	----------	11
38	8	2	10	----------	10
39	10	1	11	2	13
40	12	2	14	1	15
41	4	2	6	2	8
42	3	2	5	1	6
43	2	2	4	1	5
44	8	1	9	----------	9
45	9	3	12	1	13
46 to 60	89	8	97	6	103
61 to 90	80	19	99	13	112
91 to 120	50	11	61	8	69
121 to 150	13	6	19	3	22
151 or more	57	9	66	5	71
Total	2,016	400	2,416	205	2,621

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[1] In addition to the temporary total injuries for which companies reported days of disability, there were 218 temporary total injuries for which days of disability were not reported. To obtain total severity data for the industry, these "open cases" were closed by assigning average days of disability by classification.

TABLE 19.—*Employment and production data on bituminous-coal mines (underground and surface works) in the United States, by percentage of coal loaded mechanically, 1957*

Coal loaded mechanically, percent	Number of mines	Men at work	Man-days worked	Man-hours worked	Production, short tons	Tons per man-hour
All hand loading	2,960	26,735	4,851,105	38,383,738	32,028,010	0.83
1 to 19	30	1,370	316,196	2,505,025	1,830,915	.73
20 to 39	18	927	189,614	1,502,610	1,071,627	.71
40 to 59	39	1,690	336,833	2,671,004	2,040,934	.76
60 to 79	42	1,608	329,290	2,602,381	2,589,889	1.00
80 to 99	50	3,803	824,768	6,522,587	6,287,253	.96
100	987	120,769	25,933,976	205,408,505	259,501,158	1.26
Not stated	2,952	36,193	6,364,431	50,110,906	52,537,994	1.05
Surface[1]	----------	3,611	863,312	6,474,730	--------------	----------
Total	7,078	196,706	40,009,525	316,181,486	357,887,780	1.13

[1] Data on 75 surface installations (preparation plants and general repair shops) that could not be assigned to any single underground mine.

TABLE 20.—*Employment and production data on Pennsylvania anthracite mines (underground and surface works), by percentage of coal loaded mechanically, 1957*

Coal loaded mechanically, percent	Number of mines	Men at work	Man-days worked	Man-hours worked	Production, short tons	Ton per man-hour
All hand loading	291	2,074	381,165	2,611,076	1,350,242	0.52
1 to 19	11	1,638	372,660	2,674,907	1,187,243	.44
20 to 39	3	102	20,934	146,539	87,899	.60
40 to 59	13	1,815	348,164	2,535,238	1,070,937	.42
60 to 79	17	580	117,783	823,673	413,521	.50
80 to 99	40	3,310	704,369	5,364,833	2,161,303	.40
100	74	988	203,356	1,432,814	894,409	.62
Not stated	810	10,235	1,919,812	14,260,334	5,630,532	.39
Surface[1]	----------	435	115,140	829,349	--------------	----------
Total	1,259	21,177	4,183,383	30,678,763	12,796,086	.42

[1] Data on 10 surface installations (general repair shops) that could not be assigned to any single underground mine.

TABLE 21.—*Injury experience at bituminous-coal mines (underground and surface works) in the United States, by percentage of coal loaded mechanically, 1957* [1]

Coal loaded mechanically, percent	Number of injuries						Distribution of all injuries, per cent [2]	Average severity [3]			Time-loss rates [4] per million man-hours		Frequency rates [5] per million man-hours	
	Fatal	Nonfatal				All injuries		Permanent partial	Temporary total	All injuries				
		Permanent		Temporary total	Total nonfatal						Fatal	Nonfatal	Fatal	Nonfatal
		Total	Partial											
All hand loading	63	-------	35	1,742	1,777	1,840	14.3	379	35	246	9,848	1,952	1.64	46.30
1 to 19	3	-------	3	202	205	208	1.6	680	34	130	7,186	3,570	1.20	81.84
20 to 39	-------	-------	1	91	92	92	.7	175	30	32	-------	1,954	-------	61.23
40 to 59	3	1	6	217	224	227	1.8	292	32	144	6,739	5,469	1.12	83.86
60 to 79	1	-------	4	230	234	235	1.8	575	36	70	2,306	4,036	.38	89.92
80 to 99	9	-------	12	294	306	315	2.4	896	34	237	8,279	3,186	1.38	46.91
100	238	7	230	9,499	9,736	9,974	77.4	553	31	190	6,952	2,270	1.16	47.40
Not stated	81	4	76	1,996	2,076	2,157	-------	649	33	290	9,698	2,798	1.62	41.43
Surface [6]	4	-------	5	77	82	86	-------	368	34	330	3,707	684	.62	12.66
Total	402	12	372	14,348	14,732	15,134	-------	561	32	208	7,628	2,352	1.27	46.59

[1] Data include all injuries (underground and surface) at underground bituminous-coal mines.

[2] All percentages are calculated separately, and total percentages may differ slightly from the sums of the component percentages. Number of injuries for which percent of mechanical loading was not stated are excluded in calculating percentages; 100 percent represents a total of 12,891 injuries.

[3] A standard time-loss charge of 6,000 days is made against all fatal and permanent total injuries.

[4] Number of days charged per million man-hours.

[5] Number of injuries per million man-hours.

[6] Data on 75 surface installations (preparation plants and general repair shops) that could not be assigned to any single underground mine.

TABLE 22.—*Injury experience at Pennsylvania anthracite mines (underground and surface works), by percentage of coal loaded mechanically, 1957* [1]

Coal loaded mechanically, percent	Number of injuries						Distribution of all injuries, per cent [2]	Average severity [3]			Time-loss rates [4] per million man-hours		Frequency rates [5] per million man-hours	
	Fatal	Nonfatal				All injuries		Permanent partial	Temporary total	All injuries				
		Permanent		Temporary total	Total nonfatal						Fatal	Nonfatal	Fatal	Nonfatal
		Total	Partial											
All hand loading	4	-------	1	119	120	124	9.6	50	32	225	9,192	1,476	1.53	45.96
1 to 19	5	-------	3	221	224	229	17.8	153	30	162	11,215	2,620	1.87	83.74
20 to 39	-------	-------	-------	15	15	15	1.2	-------	22	22	-------	2,300	-------	102.36
40 to 59	5	-------	1	275	276	281	21.9	60	29	135	11,833	3,184	1.97	108.86
60 to 79	5	-------	2	38	40	45	3.5	125	27	695	36,422	1,567	6.07	48.56
80 to 99	2	2	7	390	399	401	31.2	564	30	99	2,237	5,155	.37	74.37
100	7	-------	1	181	182	189	14.7	100	23	245	29,313	3,032	4.89	127.02
Not stated	21	1	9	1,057	1,067	1,088	-------	953	23	152	8,836	2,752	1.47	74.82
Surface [6]	-------	-------	1	20	21	21	-------	75	25	27	-------	694	-------	25.32
Total	49	3	25	2,316	2,344	2,393	-------	541	26	161	9,583	3,011	1.60	76.40

[1] Data include all injuries (underground and surface) at underground anthracite mines.

[2] All percentages are calculated separately, and total percentages may differ slightly from the sums of the component percentages. Number of injuries for which percent of mechanical loading was not stated are excluded in calculating percentages; 100 percent represents a total of 1,284 injuries.

[3] A standard time-loss charge of 6,000 days is made against all fatal and permanent total injuries.

[4] Number of days charged per million man-hours.

[5] Number of injuries per million man-hours.

[6] Data on 10 surface installations (general repair shops) that could not be assigned to any single underground mine.

TABLE 23.—*Injury experience, employment, and production data on bituminous-coal mines in the United States, by number of men employed, 1957*

Number of men employed	Number of injuries		Frequency rates				Men at work	Days active	Man-days worked	Man-hours worked	Production, short tons	Tons per man-hour	Number of mines
			Per million man-hours		Per million tons								
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal							
Underground mines (includes surface works):													
1 to 4	27	244	3.61	32.64	4.45	40.19	7,188	134	962,595	7,476,333	6,070,800	0.81	2,580
5 to 9	40	862	1.90	40.91	2.07	44.68	15,290	174	2,656,143	21,070,096	19,290,767	.92	2,371
10 to 14	25	553	2.13	47.18	2.38	52.57	8,259	179	1,479,308	11,721,135	10,519,757	.90	715
15 to 19	9	314	1.39	48.61	1.58	55.15	4,587	177	813,166	6,459,308	5,693,800	.88	276
20 to 24	11	317	2.05	59.18	2.41	69.38	3,600	188	675,528	5,356,420	4,568,765	.85	167
25 to 49	12	766	.88	55.88	.89	56.91	9,679	179	1,732,404	13,706,875	13,460,050	.98	289
50 to 74	14	761	1.13	61.29	1.05	56.89	8,593	182	1,564,299	12,415,728	13,376,762	1.08	143
75 to 99	14	617	1.42	62.70	1.21	53.41	6,852	182	1,248,912	9,839,675	11,552,109	1.17	81
100 to 124	21	829	1.65	65.32	1.37	54.05	7,950	202	1,605,832	12,691,963	15,336,732	1.21	71
125 to 149	12	596	1.23	61.23	.98	48.47	6,439	194	1,248,548	9,733,477	12,296,667	1.26	47
150 to 174	14	789	1.21	68.14	.99	55.51	7,425	197	1,466,139	11,578,431	14,213,089	1.23	46
175 to 199	3	603	.38	76.20	.32	65.29	4,735	211	1,000,595	7,913,851	9,235,601	1.17	25
200 to 249	29	1,545	1.16	62.04	.93	49.35	14,830	213	3,156,808	24,902,908	31,306,811	1.26	66
250 to 299	19	940	1.01	50.21	.89	44.11	11,072	215	2,383,298	18,720,661	21,311,678	1.14	41
300 to 399	35	2,025	.86	49.97	.74	42.68	23,341	220	5,125,780	40,526,143	47,446,289	1.17	68
400 to 499	15	1,253	.54	45.12	.37	30.85	15,391	229	3,521,341	27,769,907	40,612,510	1.46	35
500 to 599	13	532	.58	23.69	.47	19.32	12,564	225	2,829,461	22,457,561	27,542,529	1.23	23
600 or more	85	1,104	1.87	24.34	1.57	20.42	25,300	224	5,676,056	45,366,284	54,053,064	1.19	34
Surface [1]	4	82	.62	12.66	------	------	3,611	239	863,312	6,474,730	------	------	------
Total	402	14,732	1.27	46.59	1.12	41.16	196,706	203	40,009,525	316,181,486	357,887,780	1.13	7,078
Strip mines:													
1 to 4	1	62	.37	23.00	.18	10.90	1,934	173	334,967	2,696,224	5,689,391	2.11	750
5 to 9	3	99	.76	25.08	.35	11.52	2,494	192	479,494	3,946,858	8,591,013	2.18	371
10 to 14	1	84	.28	23.99	.13	10.93	2,100	203	426,607	3,500,969	7,687,362	2.20	181
15 to 19	2	92	.58	26.75	.24	11.15	1,941	217	421,475	3,438,843	8,253,888	2.40	116
20 to 24	------	84	------	28.18	------	10.11	1,625	227	368,064	2,980,385	8,309,789	2.79	75
25 to 49	5	238	.45	21.41	.18	8.69	5,891	234	1,376,821	11,115,750	27,376,630	2.46	173
50 to 74	4	146	.80	29.11	.26	9.55	2,698	240	646,207	5,015,529	15,284,236	3.05	44
75 to 99	2	99	.46	22.96	.15	7.54	2,192	254	557,744	4,312,008	13,126,057	3.04	25
100 to 124	2	69	.73	25.13	.23	7.89	1,542	231	356,825	2,746,241	8,747,411	3.19	14
125 to 149	1	26	.83	21.52	.22	5.72	689	236	162,417	1,207,914	4,544,041	3.76	5
150 to 199	1	93	.35	32.09	.09	8.58	1,362	284	386,234	2,897,714	10,839,273	3.74	8
200 or more	------	15	------	10.02	------	3.11	853	230	195,863	1,497,207	4,820,686	3.22	3
Total	22	1,107	.48	24.41	.18	8.98	25,321	226	5,712,718	45,355,642	123,269,777	2.72	1,765
Auger mines:													
1 to 4	2	13	3.86	25.09	.97	6.31	416	154	63,958	518,230	2,058,966	3.97	142
5 to 9	------	31	------	41.22	------	10.40	574	165	94,584	752,080	2,981,643	3.96	91
10 to 14	------	5	------	25.00	------	6.68	178	141	25,063	200,019	747,974	3.74	16
15 to 19	1	4	6.28	25.13	2.07	8.28	148	138	20,497	159,172	482,992	3.03	9
20 to 24	------	------	------	------	------	------	65	102	6,661	51,739	207,113	4.00	3
25 or more	------	23	------	33.95	------	14.94	492	177	87,201	677,543	1,539,055	2.27	13
Total	3	76	1.27	32.22	.37	9.48	1,873	159	297,964	2,358,783	8,017,743	3.40	274

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[1] Data on 75 surface installations (preparation plants and general repair shops) that could not be assigned to any single underground mine.

Original from THE OHIO STATE UNIVERSITY

TABLE 24.—*Injury experience, employment, and production data on Pennsylvania anthracite mines, by number of men employed, 1957*

Number of men employed	Number of injuries		Frequency rates				Men at work	Days active	Man-days worked	Man-hours worked	Production, short tons	Tons per man-hour	Number of mines
			Per million man-hours		Per million tons								
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal							
Underground mines (includes surface works):													
1 to 4	5	66	1.69	22.28	4.30	56.80	2,745	156	428,151	2,962,525	1,162,007	0.39	904
5 to 9	1	60	.72	43.44	1.32	79.45	1,032	196	202,713	1,381,183	755,162	.55	167
10 to 14	3	55	2.85	52.26	4.96	90.88	701	218	153,079	1,052,362	605,202	.58	59
15 to 19	5	33	6.84	45.15	11.34	74.85	440	245	108,010	730,855	440,896	.60	26
20 to 24	1	32	1.64	52.65	3.67	117.36	380	229	86,887	607,829	272,665	.45	17
25 to 49	2	79	1.70	67.29	3.63	143.36	776	211	163,491	1,174,022	551,042	.47	23
50 to 74	5	131	2.90	75.89	6.24	163.55	1,109	220	244,128	1,726,172	800,993	.46	17
75 to 99	2	86	2.57	110.37	4.40	189.13	509	214	108,831	779,186	454,718	.58	6
100 to 149	4	208	2.83	147.15	5.08	263.93	1,003	199	190,653	1,413,523	788,086	.56	8
150 to 199	2	220	1.00	109.58	2.55	280.42	1,335	200	267,288	2,007,739	784,525	.39	8
200 to 299	1	205	.37	76.86	.81	166.86	1,991	175	349,118	2,667,100	1,228,583	.46	8
300 to 399	3	197	1.09	71.56	2.43	159.87	1,838	194	357,275	2,753,069	1,232,239	.45	5
400 or more	15	951	1.42	89.77	4.03	255.65	6,883	203	1,399,619	10,593,849	3,719,968	.35	11
Surface [1]	------	21	------	25.32	------	------	435	265	115,140	829,349	------	------	------
Total	49	2,344	1.60	76.40	3.83	183.18	21,177	198	4,183,393	30,678,763	12,796,086	.42	1,259
Strip mines:													
1 to 4	------	4	------	107.46	------	67.90	57	90	5,142	37,222	58,908	1.58	19
5 to 9	------	24	------	58.34	------	45.41	329	174	57,172	411,399	528,548	1.28	50
10 to 14	------	7	------	26.46	------	25.25	199	190	37,810	264,562	277,177	1.05	17
15 to 19	------	16	------	31.46	------	28.07	399	180	71,921	508,646	569,934	1.12	23
20 to 24	------	13	------	34.03	------	38.26	277	199	55,168	382,018	339,730	.89	13
25 to 49	------	60	------	28.90	------	25.12	1,339	217	290,512	2,076,045	2,388,554	1.15	37
50 to 74	------	20	------	30.06	------	25.85	411	227	93,165	665,304	773,767	1.16	7
75 to 99	------	39	------	35.16	------	26.38	691	222	153,222	1,109,254	1,478,596	1.33	8
100 or more	------	49	------	39.49	------	43.61	844	208	175,292	1,240,815	1,123,659	.90	4
Total	------	232	------	34.65	------	30.77	4,546	207	939,404	6,695,265	7,538,873	1.13	178
Culm banks:													
1 to 4	------	1	------	16.90	------	2.31	54	150	8,099	59,161	432,734	7.31	20
5 to 9	------	10	------	52.49	------	8.66	187	140	26,264	190,511	1,154,482	6.06	27
10 to 14	------	5	------	22.34	------	4.18	172	181	31,076	223,855	1,195,994	5.34	15
15 to 19	------	7	------	32.89	------	7.57	164	180	29,448	212,848	924,188	4.34	10
20 to 24	------	8	------	60.57	------	52.16	111	170	18,849	132,083	153,380	1.16	5
25 or more	------	40	------	103.59	------	58.66	357	151	54,058	386,128	681,916	1.77	10
Total	------	71	------	58.94	------	15.63	1,045	160	167,794	1,204,586	4,542,694	3.77	87
Dredges:													
1 to 4	------	------	------	------	------	------	24	196	4,713	42,570	56,281	1.32	10
5 to 9	------	1	------	17.10	------	16.21	41	164	6,710	58,480	61,691	1.05	6
10 or more	------	3	------	22.30	------	5.61	70	240	16,821	134,518	534,766	3.98	2
Total	------	4	------	16.98	------	6.13	135	209	28,244	235,568	652,738	2.77	18
Preparation plants:													
1 to 4	------	5	------	33.05	------	------	101	198	19,952	151,295	------	------	------
5 to 9	1	14	2.45	31.29	------	------	232	232	53,718	408,227	------	------	------
10 to 14	------	22	------	73.80	------	------	213	183	39,066	298,091	------	------	------
15 to 19	------	15	------	89.40	------	------	117	195	22,846	167,793	------	------	------
20 to 24	------	11	------	41.08	------	------	201	178	35,828	267,762	------	------	------
25 to 49	1	53	1.12	59.35	------	------	661	186	122,653	892,940	------	------	------
50 to 74	------	40	------	38.38	------	------	661	207	137,008	1,042,283	------	------	------
75 to 99	------	10	------	31.03	------	------	255	167	42,492	322,221	------	------	------
100 to 124	------	18	------	35.20	------	------	351	189	66,266	511,282	------	------	------
125 to 149	------	15	------	21.11	------	------	433	220	95,507	710,495	------	------	------
150 or more	------	23	------	31.74	------	------	697	148	102,944	724,698	------	------	------
Total	2	226	.36	41.11	------	------	3,922	188	738,280	5,497,087	------	------	------

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[1] Data on 10 surface installations (general repair shops) that could not be assigned to any single underground mine.

TABLE 25.—*Injury experience, employment, and production data on bituminous-coal mines in the United States, by length of shift, 1957*

Length of shift, hours	Number of injuries		Frequency rates				Men at work	Days active	Man-days worked	Man-hours worked	Production, short tons	Tons per man-hour	Number of mines
			Per million man-hours		Per million tons								
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal							
Underground mines (includes surface works):													
5.5 to 6.4	------	16	------	30.71	------	44.09	594	145	86,256	521,017	362,900	0.70	143
6.5 to 7.4	8	252	.86	26.96	1.96	61.62	7,211	180	1,294,858	9,348,462	4,089,564	.44	601
7.5 to 8.4	387	14,276	1.29	47.66	1.12	41.29	184,562	205	37,871,572	299,548,250	345,763,659	1.15	6,294
8.5 to 9.4	4	149	.84	31.35	.66	24.50	3,388	161	545,926	4,752,986	6,080,784	1.28	15
All other	3	39	1.49	19.40	1.88	24.51	951	222	210,913	2,010,771	1,590,873	.79	25
Total	402	14,732	1.27	46.59	1.12	41.16	196,706	203	40,009,525	316,181,486	357,887,780	1.13	7,078
Strip mines:													
5.5 to 6.4	------	2	------	34.94	------	8.18	46	205	9,435	57,246	244,610	4.27	11
6.5 to 7.4	7	270	.71	27.38	.21	8.06	6,005	225	1,352,570	9,861,958	33,515,161	3.40	184
7.5 to 8.4	12	692	.42	24.20	.16	9.00	16,267	222	3,611,878	28,593,724	76,898,495	2.69	1,354
8.5 to 9.4	3	105	.63	21.98	.32	11.36	2,029	263	533,316	4,777,252	9,246,821	1.94	134
All other	------	38	------	18.40	------	11.29	974	211	205,519	2,065,462	3,364,690	1.63	82
Total	22	1,107	.48	24.41	.18	8.98	25,321	226	5,712,718	45,355,642	123,269,777	2.72	1,765
Auger mines:													
6.5 to 7.4	1	17	2.30	39.08	.53	8.99	373	160	59,902	434,989	1,890,343	4.34	38
7.5 to 8.4	1	52	.57	29.49	.18	9.42	1,397	158	220,659	1,763,045	5,519,198	3.13	212
8.5 to 9.4	------	2	------	18.40	------	4.56	62	196	12,132	108,701	439,027	4.04	13
All other	1	5	19.21	96.06	5.91	29.56	41	128	5,271	52,048	169,175	3.25	11
Total	3	76	1.27	32.22	.37	9.48	1,873	159	297,964	2,358,783	8,017,743	3.40	274

TABLE 26.—*Injury experience, employment, and production data on Pennsylvania anthracite mines, by length of shift, 1957*

Length of shift, hours	Number of injuries		Frequency rates				Men at work	Days active	Man-days worked	Man-hours worked	Production, short tons	Tons per man-hour	Number of mines
			Per million man-hours		Per million tons								
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal							
Underground mines (includes surface works):													
5.5 to 6.4	3	38	3.63	45.94	5.57	70.58	614	223	136,988	827,129	538,370	0.65	115
6.5 to 7.4	39	1,462	2.10	78.61	4.58	171.68	13,681	191	2,608,799	18,598,144	8,515,898	.46	1,008
7.5 to 8.4	6	814	.59	79.98	1.64	222.18	6,245	205	1,282,248	10,177,291	3,663,681	.36	95
8.5 to 9.4	------	------	------	------	------	------	9	228	2,051	18,101	3,173	.18	3
All other	1	9	4.37	39.34	13.34	120.06	193	198	38,157	228,749	74,964	.33	38
Surface [1]	------	21	------	25.32	------	------	435	265	115,140	829,349	------	------	------
Total	49	2,344	1.60	76.40	3.83	183.18	21,177	198	4,183,383	30,678,763	12,796,086	.42	1,259
Strip mines:													
5.5 tc 6.4	------	1	------	22.57	------	38.23	36	205	7,378	44,303	26,160	.59	2
6.5 to 7.4	------	217	------	35.25	------	31.75	4,202	207	869,101	6,156,036	6,835,105	1.11	155
7.5 to 8.4	------	14	------	28.29	------	20.66	308	204	62,925	494,926	677,608	1.37	21
All other	------	------	------	------	------	------	------	------	------	------	------	------	------
Total	------	232	------	34.65	------	30.77	4,546	207	939,404	6,695,265	7,538,873	1.13	178

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[1] Data on 10 surface installations (general repair shops) that could not be assigned to any single underground mine.

TABLE 27.—*Injury experience, employment, and production data on bituminous-coal mines in the United States, by number of shifts, 1957*

Number of shifts	Number of injuries		Frequency rates				Men at work	Days active	Man-days worked	Man-hours worked	Production, short tons	Tons per man-hour	Number of mines
			Per million man-hours		Per million tons								
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal							
Underground mines (includes surface works):													
1	142	3,781	1.68	44.76	1.86	49.53	61,530	174	10,723,620	84,472,166	76,334,515	0.90	5,358
2	144	7,165	1.15	57.26	.94	46.59	74,332	214	15,870,816	125,137,705	153,786,417	1.23	672
3	116	3,364	1.21	35.06	.99	28.85	54,502	222	12,084,756	95,938,004	116,615,968	1.22	181
Combination	------	422	------	39.68	------	37.84	6,342	210	1,330,333	10,633,611	11,150,880	1.05	867
Total	402	14,732	1.27	46.59	1.12	41.16	196,706	203	40,009,525	316,181,486	357,887,780	1.13	7,078
Strip mines:													
1	17	662	.60	23.34	.22	8.44	16,351	219	3,587,318	28,360,265	78,405,201	2.76	1,183
2	1	232	.12	28.48	.05	12.01	4,179	236	986,418	8,145,675	19,317,648	2.37	216
3	1	109	.20	22.13	.07	7.44	2,572	243	624,431	4,924,765	14,647,806	2.97	74
Combination	3	104	.76	26.50	.28	9.54	2,219	232	514,548	3,924,937	10,899,122	2.78	292
Total	22	1,107	.48	24.41	.18	8.98	25,321	226	5,712,718	45,355,642	123,269,777	2.72	1,765
Auger mines:													
1	3	50	2.02	33.70	.62	10.37	1,214	154	186,838	1,483,848	4,823,195	3.25	184
2	------	15	------	37.00	------	10.00	296	177	52,388	405,342	1,500,287	3.70	21
3	------	------	------	------	------	------	74	130	9,626	76,708	305,708	3.98	3
Combination	------	11	------	28.00	------	7.92	289	170	49,112	392,885	1,388,553	3.53	66
Total	3	76	1.27	32.22	.37	9.48	1,873	159	297,964	2,358,783	8,017,743	3.40	274

TABLE 28.—*Injury experience, employment, and production data on Pennsylvania anthracite mines, by number of shifts, 1957*

Number of shifts	Number of injuries		Frequency rates				Men at work	Days active	Man-days worked	Man-hours worked	Production, short tons	Tons per man-hour	Number of mines
			Per million man-hours		Per million tons								
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal							
Underground mines (includes surface works):													
1	33	1,328	1.70	68.37	3.96	159.40	14,256	186	2,659,922	19,424,451	8,331,280	0.43	1,181
2	13	790	1.49	90.37	3.32	201.62	5,460	218	1,188,828	8,741,548	3,918,209	.45	71
3	3	205	1.78	121.78	5.49	375.05	1,026	214	219,493	1,683,415	546,597	.32	7
Surface [1]	------	21	------	25.32	------	------	435	265	115,140	829,349	------	------	------
Total	49	2,344	1.60	76.40	3.83	183.18	21,177	198	4,183,383	30,678,763	12,796,086	.42	1,259
Strip mines:													
1	------	130	------	34.34	------	31.25	2,748	194	531,852	3,786,051	4,160,512	1.10	106
2	------	55	------	37.61	------	34.14	972	211	205,306	1,462,388	1,611,154	1.10	45
3	------	47	------	32.48	------	26.60	826	245	202,246	1,446,826	1,767,207	1.22	27
Total	------	232	------	34.65	------	30.77	4,546	207	939,404	6,695,265	7,538,873	1.13	178

[1] Data on 10 surface installations (general repair shops) that could not be assigned to any single underground mine.

Table 29.—*Injury experience, employment, and production data on bituminous-coal mines in the United States, by days-active group, 1957*

Days active	Number of injuries		Frequency rates				Men at work	Days active	Man-days worked	Man-hours worked	Production, short tons	Tons per man-hour	Number of mines
			Per million man-hours		Per million tons								
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal							
Underground mines (includes surface works):													
1 to 49	21	77	17.33	63.55	20.04	73.47	5,729	27	154,801	1,211,647	1,047,979	0.86	621
50 to 99	13	282	2.86	61.97	2.95	64.06	7,693	75	576,881	4,550,620	4,402,421	.97	872
100 to 149	30	599	2.67	53.30	2.89	57.79	11,337	126	1,426,215	11,237,375	10,364,565	.92	1,088
150 to 199	64	2,362	1.38	50.85	1.29	47.78	32,635	180	5,864,636	46,452,165	49,439,062	1.06	1,566
200 to 249	255	10,771	1.09	46.00	.92	39.01	130,266	227	29,614,538	234,150,484	276,078,295	1.18	2,568
250 to 299	17	603	.95	33.67	1.06	37.52	8,780	261	2,290,159	17,907,133	16,071,981	.90	327
300 or more	2	38	2.98	56.54	4.14	78.60	266	309	82,295	672,062	483,477	.72	36
Total	402	14,732	1.27	46.59	1.12	41.16	196,706	203	40,009,525	316,181,486	357.887,780	1.13	7,078
Strip mines:													
1 to 49	-------	17	-------	87.83	-------	30.35	812	30	24,110	193,562	560,148	2.89	125
50 to 99	1	21	1.43	29.96	.47	9.86	1,123	78	88,044	700,948	2,130,836	3.04	173
100 to 149	1	40	.62	24.76	.24	9.43	1,611	130	208,700	1,615,246	4,241,723	2.63	214
150 to 199	2	126	.46	29.13	.17	10.80	3,079	178	547,671	4,325,368	11,662,000	2.70	236
200 to 249	7	335	.49	23.37	.18	8.63	8,058	224	1,808,100	14,331,812	38,810,831	2.71	571
250 to 299	7	357	.46	23.64	.16	7.90	7,059	272	1,918,270	15,104,535	45,160,526	2.99	275
300 or more	4	211	.44	23.23	.19	10.19	3,579	312	1,117,823	9,084,171	20,703,713	2.28	171
Total	22	1,107	.48	24.41	.18	8.98	25,321	226	5,712,718	45,355,642	123,269,777	2.72	1,765
Auger mines:													
1 to 49	1	2	21.21	42.43	7.16	14.32	236	25	5,933	47,137	139,658	2.96	28
50 to 99	-------	4	-------	39.90	-------	7.50	170	76	12,903	100,242	533,006	5.32	30
100 to 149	1	6	4.41	26.46	1.20	7.23	238	118	28,222	226,731	830,135	3.66	51
150 to 199	-------	29	-------	34.33	-------	10.03	612	174	106,581	844,624	2,892,122	3.42	85
200 to 249	1	26	1.33	34.67	.36	9.49	452	213	96,354	749,941	2,739,491	3.65	61
250 to 299	-------	5	-------	20.29	-------	7.90	106	284	30,085	246,463	633,243	2.57	14
300 or more	-------	4	-------	27.85	-------	15.99	59	303	17,886	143,645	250,088	1.74	5
Total	3	76	1.27	32.22	.37	9.48	1,873	159	297,964	2,358,783	8,017,743	3.40	274

Table 30.—*Injury experience, employment, and production data on Pennsylvania anthracite mines, by days-active group, 1957*

Days active	Number of injuries		Frequency rates				Men at work	Days active	Man-days worked	Man-hours worked	Production, short tons	Tons per man-hour	Number of mines
			Per million man-hours		Per million tons								
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal							
Underground mines (includes surface works):													
1 to 49	1	14	11.24	157.34	33.57	470.00	443	29	12,888	88,979	29,787	0.33	121
50 to 99	2	33	3.25	53.56	6.89	113.75	1,123	78	88,138	616,073	200,107	.47	190
100 to 149	-------	69	-------	55.26	-------	130.94	1,392	128	178,050	1,248,680	526,976	.42	191
150 to 199	14	703	1.61	80.79	3.70	186.08	6,440	182	1,175,032	8,701,314	3,778,045	.43	187
200 to 249	23	1,303	1.50	84.76	3.71	210.11	9,305	221	2,059,262	15,373,592	6,201,631	.40	335
250 to 299	8	176	2.45	53.93	4.71	103.55	1,770	267	473,285	3,263,337	1,699,601	.52	194
300 or more	1	25	1.79	44.85	3.70	92.61	269	303	81,588	557,439	269,939	.48	41
Surface [1]	-------	21	-------	25.32	-------	-------	435	265	115,140	829,349	------------	-------	-------
Total	49	2,344	1.60	76.40	3.83	183.18	21,177	198	4,183,383	30,678,763	12,796,086	.42	1,259
Strip mines:													
1 to 49	-------	2	-------	87.79	-------	96.92	133	24	3,217	22,782	20,636	.90	18
50 to 99	-------	10	-------	72.23	-------	70.25	253	78	19,614	138,451	142,343	1.03	20
100 to 149	-------	8	-------	22.58	-------	16.83	391	129	50,293	354,317	475,201	1.34	23
150 to 199	-------	57	-------	43.76	-------	40.53	987	186	183,596	1,302,415	1,406,458	1.08	24
200 to 249	-------	85	-------	29.79	-------	26.11	1,740	228	396,961	2,853,531	3,255,505	1.14	47
250 to 299	-------	64	-------	35.69	-------	32.28	937	270	253,192	1,793,077	1,982,752	1.10	38
300 or more	-------	6	-------	26.01	-------	23.44	105	310	32,531	230,692	255,978	1.11	8
Total	-------	232	-------	34.65	-------	30.77	4,546	207	939,404	6,695,265	7,538,873	1.13	178

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[1] Data on 10 surface installations (general repair shops) that could not be assigned to any single underground mine.

TABLE 31.—*Injury experience, employment, and production data on* ***bituminous-coal mines*** *(underground and surface works) in the United States, by thickness of bed or vein, 1957*

Thickness of bed or vein, inches	Number of injuries		Frequency rates				Men at work	Days active	Man-days worked	Man-hours worked	Production, short tons	Tons per man-hour	Number of mines
			Per million man-hours		Per million tons								
	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal							
Less than 24	2	18	1.48	13.32	3.41	30.67	1,059	163	173,121	1,351,370	586,847	0.43	96
25 to 36	33	1,465	1.22	54.26	1.54	68.56	18,114	188	3,409,278	26,909,963	21,367,485	.79	1,423
37 to 48	100	4,826	1.17	56.41	1.20	58.12	53,103	204	10,853,444	85,549,126	83,039,322	.97	1,898
49 to 60	48	2,294	1.14	54.60	.96	45.72	25,800	205	5,278,736	42,010,675	50,175,521	1.19	766
61 to 72	87	2,114	1.93	46.93	1.44	35.07	27,231	209	5,699,763	45,047,575	60,283,933	1.34	449
73 to 84	37	1,435	1.00	38.73	.68	26.35	22,441	209	4,683,818	37,054,225	54,456,298	1.47	215
85 to 96	22	648	.90	26.38	.68	20.10	14,079	222	3,110,450	24,568,688	32,229,274	1.31	111
97 to 108	17	246	2.24	32.48	1.48	21.47	4,895	193	946,998	7,574,163	11,457,565	1.51	72
109 or more	17	369	2.26	49.07	1.74	37.72	4,337	221	959,657	7,519,649	9,781,940	1.30	65
Not stated	35	1,235	1.09	38.56	1.01	35.79	22,036	182	4,021,948	32,031,322	34,509,595	1.08	1,983
Surface [1]	4	82	.62	12.66			3,611	239	863,312	6,474,730			
Total	402	14,732	1.27	46.59	1.12	41.16	196,706	203	40,009,525	316,181,486	357,887,780	1.13	7,078

[1] Data on 75 surface installations (preparation plants and general repair shops) that could not be assigned to any single underground mine.

TABLE 32.—*Injury experience, employment, and production data on* ***Pennsylvania anthracite mines*** *(underground and surface works), by thickness of bed or vein, 1957*

Thickness of bed or vein, inches	Number of injuries		Frequency rates				Men at work	Days active	Man-days worked	Man-hours worked	Production, short tons	Tons per man-hour	Number of mines
			Per million man-hours		Per million tons								
	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal							
Less than 24		25		95.27		182.69	200	190	38,065	262,405	136,845	0.52	25
25 to 36	3	33	3.59	39.50	8.01	88.11	578	204	118,176	835,547	374,548	.45	92
37 to 48	4	107	2.83	75.81	5.23	139.89	971	212	205,673	1,411,411	764,873	.54	128
49 to 60	4	289	1.06	76.57	2.57	185.74	2,286	213	487,014	3,774,296	1,555,943	.41	127
61 to 72	1	137	.50	69.17	1.06	145.82	1,257	221	278,057	1,980,653	939,533	.47	94
73 to 84	2	87	1.17	50.85	2.12	92.37	1,114	208	232,080	1,710,980	941,882	.55	63
85 to 96	5	336	1.56	104.61	4.38	294.31	1,951	218	426,101	3,212,028	1,141,640	.36	51
97 to 108		17		43.93		97.03	323	174	56,053	387,006	175,203	.45	26
109 or more	10	543	1.71	92.78	3.59	195.15	4,213	196	825,419	5,852,222	2,782,459	.48	87
Not stated	20	749	1.92	71.86	5.02	188.04	7,849	178	1,401,602	10,422,866	3,983,160	.38	566
Surface [1]		21		25.32			435	265	115,140	829,349			
Total	49	2,344	1.60	76.40	3.83	183.18	21,177	198	4,183,383	30,678,763	12,796,086	.42	1,259

[1] Data on 10 surface installations (general repair shops) that could not be assigned to any single underground mine.

TABLE 33.—*Injury experience, employment, and production data on bituminous-coal mines in the United States, by production group, 1957*

Production group, tons	Number of injuries		Frequency rates				Men at work	Days active	Man-days worked	Man-hours worked	Production, short tons	Tons per man-hour	Number of mines
			Per million man-hours		Per million tons								
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal							
Underground mines (Includes surface works):													
Less than 25,000	107	2,079	2.21	42.87	2.75	53.44	39,399	156	6,140,267	48,493,532	38,900,608	0.80	5,987
25,000 to 49,999	16	678	1.23	52.02	1.36	57.67	9,371	176	1,648,189	13,034,268	11,755,707	.90	333
50,000 to 99,999	15	888	1.03	61.25	1.04	61.69	10,093	181	1,828,759	14,496,920	14,394,616	.99	198
100,000 to 249,999	42	2,029	1.36	65.61	1.29	62.36	19,631	199	3,909,087	30,926,823	32,536,277	1.05	200
250,000 to 499,999	52	3,445	.96	63.61	.90	59.76	31,720	217	6,878,278	54,158,770	57,650,039	1.06	159
500,000 to 749,999	29	1,686	.77	44.63	.59	34.24	22,084	216	4,778,410	37,773,423	49,237,196	1.30	80
750,000 to 999,999	36	1,198	1.05	34.85	.92	30.80	19,068	228	4,345,586	34,379,032	38,890,281	1.13	45
1,000,000 or more	101	2,647	1.32	34.63	.88	23.11	41,729	230	9,617,637	76,443,988	114,523,056	1.50	76
Surface [1]	4	82	.62	12.66	------	------	3,611	239	863,312	6,474,730	------	------	------
Total	402	14,732	1.27	46.59	1.12	41.16	196,706	203	40,009,525	316,181,486	357,887,780	1.13	7,078
Strip mines:													
Less than 25,000	5	133	.88	23.28	.60	15.93	4,532	156	709,072	5,711,978	8,350,981	1.46	1,032
25,000 to 49,999	2	118	.45	26.55	.22	13.29	2,544	213	541,702	4,444,390	8,879,276	2.00	248
50,000 to 99,999	1	176	.14	24.45	.07	11.96	3,779	232	878,420	7,196,991	14,716,747	2.04	208
100.000 to 249,999	4	246	.36	21.99	.14	8.96	5,750	241	1,386,377	11,185,865	27,469,961	2.46	175
250,000 to 499,999	5	161	.83	26.69	.25	8.19	3,165	243	767,979	6,032,261	19,657,430	3.26	54
500.000 to 749,999	3	112	.73	27.14	.19	7.12	2,291	240	550,838	4,126,772	15,736,347	3.81	25
750.000 to 999,999	------	42	------	20.48	------	5.33	1,005	273	274,399	2,050,256	7,872,784	3.84	9
1,000,000 or more	2	119	.43	25.83	.10	5.78	2,255	268	603,931	4,607,129	20,586,251	4.47	14
Total	22	1,107	.48	24.41	.18	8.98	25,321	226	5,712,718	45,355,642	123,269,777	2.72	1,765
Auger mines:													
Less than 25,000	1	15	1.47	22.11	.69	10.40	723	117	84,611	678,523	1,442,437	2.13	152
25,000 to 49,999	2	25	2.61	32.64	.67	8.41	544	176	95,906	765,872	2,971,098	3.88	88
50,000 to 99,999	------	14	------	44.26	------	11.77	243	165	40,004	316,285	1,189,869	3.76	17
100,000 or more	------	22	------	36.78	------	9.11	363	213	77,443	598,103	2,414,339	4.04	17
Total	3	76	1.27	32.22	.37	9.48	1,873	159	297,964	2,358,783	8,017,743	3.40	274

[1] Data on 75 surface installations (preparation plants and general repair shops) that could not be assigned to any single underground mine.

TABLE 34.—*Injury experience, employment, and production data on Pennsylvania anthracite mines, by production group, 1957*

Production group, tons	Number of injuries		Frequency rates				Men at work	Days active	Man-days worked	Man-hours worked	Production, short tons	Tons per man-hour	Number of mines
			Per million man-hours		Per million tons								
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal							
Underground mines (Includes surface works):													
Less than 25,000	12	294	1.59	39.04	3.60	88.27	5,878	185	1,089,115	7,531,542	3,330,502	0.44	1,185
25,000 to 49,999	8	84	7.14	74.99	12.76	133.98	732	213	156,024	1,120,091	626,932	.56	18
50,000 to 99,999	8	398	1.69	84.01	3.98	198.15	3,110	206	639,489	4,737,542	2,008,529	.42	27
100,000 to 249,999	9	630	1.43	100.01	3.44	240.52	4,552	185	843,803	6,299,161	2,619,373	.42	18
250,000 to 499,999	8	694	1.05	91.51	2.59	224.72	4,876	201	981,492	7,584,149	3,088,333	.41	9
500,000 or more	4	223	1.55	86.54	3.56	198.68	1,594	225	358,320	2,576,929	1,122,417	.44	2
Surface [1]	------	21	------	25.32	------	------	435	265	115,140	829,349	------	------	------
Total	49	2,344	1.60	76.40	3.83	183.18	21,177	198	4,183,383	30,678,763	12,796,086	.42	1,259
Strip mines:													
Less than 25,000	------	47	------	41.68	------	49.54	1,024	156	159,465	1,127,565	948,715	.84	105
25,000 to 49,999	------	20	------	21.73	------	20.16	627	207	129,955	920,254	991,849	1.08	25
50.000 to 99,999	------	71	------	37.18	------	34.78	1,145	234	268,423	1,909,666	2,041,191	1.07	30
100.000 to 249.999	------	54	------	32.49	------	24.99	1,042	222	231,909	1,662,245	2,160,836	1.30	14
250,000 or more	------	40	------	37.19	------	28.65	708	211	149,652	1,075,535	1,396,282	1.30	4
Total	------	232	------	34.65	------	30.77	4,546	207	939,404	6,695,265	7,538,873	1.13	178
Culm banks:													
Less than 25,000	------	33	------	92.00	------	113.74	403	123	49,524	358,704	290,131	.81	39
25,000 to 49,999	------	26	------	88.62	------	36.31	262	156	41,012	293,391	716,124	2.44	20
50,000 to 99,999	------	9	------	32.22	------	7.60	207	192	39,839	279,280	1,184,626	4.24	15
100,000 to 249,999	------	3	------	20.48	------	2.64	95	208	19,805	146,463	1,137,317	7.76	9
250,000 or more	------	------	------	------	------	------	78	226	17,614	126,748	1,214,496	9.58	4
Total	------	71	------	58.94	------	15.63	1,045	160	167,794	1,204,586	4,542,694	3.77	87
Dredges	------	4	------	16.98	------	6.13	135	209	28,244	235,568	652,738	2.77	18
Preparation plants	2	226	.36	41.11	------	------	3,922	188	738,280	5,497,087	------	------	------

[1] Data on 10 surface installations (general repair shops) that could not be assigned to any single underground mine.

TABLE 35.—*Injury experience, employment, and production data on bituminous-coal mines (underground and surface works) in the United States, by kind of mine opening, 1957*

Kind of opening	Number of injuries		Frequency rates				Men at work	Days active	Man-days worked	Man-hours worked	Production, short tons	Ton per man-hour	Number of mines
			Per million man-hours		Per million tons								
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal							
Shaft	52	1,773	0.97	33.06	0.84	28.48	32,342	210	6,804,211	53,637,140	62,242,203	1.16	246
Slope	72	2,978	1.24	51.15	.90	37.30	36,117	205	7,403,661	58,223,626	79,846,869	1.37	735
Drift	237	8,602	1.43	51.85	1.30	47.29	102,741	204	20,931,363	165,897,085	181,891,811	1.10	4,145
Not stated	37	1,297	1.16	40.60	1.09	38.25	21,895	183	4,006,978	31,948,905	33,906,897	1.06	1,952
Surface [1]	4	82	.62	12.66			3,611	239	863,312	6,474,730			
Total	402	14,732	1.27	46.59	1.12	41.16	196,706	203	40,009,525	316,181,486	357,887,780	1.13	7,078

[1] Data on 75 surface installations (preparation plants and general repair shops) that could not be assigned to any single underground mine.

TABLE 36.—*Injury experience, employment, and production data on Pennsylvania anthracite mines (underground and surface works), by kind of mine opening, 1957*

Kind of opening	Number of injuries		Frequency rates				Men at work	Days active	Man-days worked	Man-hours worked	Production, short tons	Ton per man-hour	Number of mines
			Per million man-hours		Per million tons								
	Fatal	Non-fatal	Fatal	Non-fatal	Fatal	Non-fatal							
Shaft	9	926	0.87	89.72	2.12	218.41	6,828	198	1,350,137	10,321,190	4,239,807	0.41	39
Slope	23	641	2.62	72.99	5.18	144.49	5,898	216	1,272,288	8,782,402	4,436,194	.50	651
Drift	2	56	2.01	56.35	3.74	104.67	658	210	138,544	993,708	535,003	.54	56
Not stated	15	700	1.54	71.78	4.18	195.25	7,358	178	1,307,274	9,752,114	3,585,082	.37	513
Surface [1]		21		25.32			435	265	115,140	829,349			
Total	49	2,344	1.60	76.40	3.83	183.18	21,177	198	4,183,383	30,678,763	12,796,086	.42	1,259

[1] Data on 10 surface installations (general repair shops) that could not be assigned to any single underground mine.

INJURY EXPERIENCE BY STATES, 1957

Reports were received from 29 States producing bituminous-coal, lignite, and anthracite in 1957. Ten of these—Colorado, Maryland, Washington, Texas, New Mexico, Arizona, Georgia, South Dakota, California, and Oregon—reported no fatalities. Four States, Arizona, Georgia, California, and Oregon, reported no nonfatal injuries. The fatality rates of seven bituminous-coal-producing States—Alabama, Ohio, Indiana, Oklahoma, Missouri, Pennsylvania, and Illinois—and the Pennsylvania anthracite industry were lower than the average of 1.17 recorded for bituminous-coal and the industry as a whole. This rate was exceeded by 12 States ranging from 1.19 in Kentucky to 9.53 in Alaska. Eighteen States recorded nonfatal rates lower than the rate of 43.74 for the bituminous-coal industry. Nonfatal rates in seven bituminous-coal-producing States and the Pennsylvania anthracite industry exceeded the U.S. average of 46.04 for the industry as a whole.

Underground bituminous-coal mines in seven States—West Virginia, Pennsylvania, Kentucky, Illinois, Virginia, Ohio, and Alabama—produced 94 percent of the total underground tonnage and accounted for 85 percent of the active mines.

Six States—Ohio, Pennsylvania, Illinois, Kentucky, West Virginia, and Indiana—reported 85 percent of the coal produced at bituminous-coal stripping operations and represented 78 percent of the active strip mines.

Three of the seven States reporting auger mining operations, West Virginia, Kentucky, and Ohio, had 72 percent of the total number of such operations and reported 85 percent of the coal produced at auger mines.

INJURY DATA BY STATES, 1957

TABLE 37.—*Relative standing of States according to fatal- and nonfatal-injury rates per million man-hours of exposure, 1957*

State	Fatality rate	State	Nonfatal-injury rate
Colorado	----------	Arizona	----------
Maryland	----------	Georgia	----------
Washington	----------	California	----------
Texas	----------	Oregon	----------
New Mexico	----------	Kansas	7. 26
Arizona	----------	Texas	11. 61
Georgia	----------	Alabama	14. 73
South Dakota	----------	Iowa	18. 84
California	----------	Ohio	22. 36
Oregon	----------	Pennsylvania (bituminous)	26. 76
Alabama	0. 36	Wyoming	27. 30
Ohio	. 37	North Dakota	30. 87
Indiana	. 47	Arkansas	35. 94
Oklahoma	. 59	Tennessee	35. 98
Missouri	. 67	Missouri	36. 12
Pennsylvania (bituminous)	. 70	New Mexico	38. 40
Illinois	1. 07	Colorado	38. 50
Pennsylvania (anthracite)	1. 15	Montana	40. 85
		Utah	41. 64
		Illinois	41. 86
		Virginia	41. 96
		Maryland	43. 06
United States bituminous	1. 17	United States bituminous	43. 74
United States average	1. 17	United States average	46. 04
Kentucky	1. 19	Kentucky	47. 41
Tennessee	1. 24	South Dakota	51. 28
West Virginia	1. 49	Indiana	52. 32
Virginia	1. 53	West Virginia	59. 22
North Dakota	1. 82	Pennsylvania (anthracite)	64. 93
Wyoming	2. 02	Oklahoma	83. 81
Kansas	2. 42	Washington	100. 51
Montana	2. 92	Alaska	135. 01
Utah	3. 42		
Iowa	5. 54		
Arkansas	7. 19		
Alaska	9. 53		

TABLE 38.—*Injury experience, employment, and production data on coal mines in the United States, by States and general work location, 1957*

State	Number of mines				Men working						Days active	Man-days of work					
	Under-ground	Strip	Auger	Total	Underground mines			Strip mines	Auger mines	Total		Underground mines			Strip mines	Auger	Total
					Under-ground	Sur-face [1]	Total					Under-ground	Surface [1]	Total			
Alabama	210	35	1	246	6,503	1,558	8,061	622	4	8,687	203	1,320,424	318,940	1,639,364	123,873	373	1,763,610
Alaska	4	6	------	10	110	94	204	129	------	333	228	23,689	21,786	45,475	30,323	------	75,798
Arizona	3	------	------	3	29	6	35	------	------	35	106	3,027	690	3,717	------	------	3,717
Arkansas	18	9	------	27	386	68	454	94	------	548	160	58,443	9,400	67,843	19,783	------	87,626
California	------	1	------	1	------	------	------	3	------	3	178	------	------	------	535	------	535
Colorado	121	5	------	126	1,984	491	2,475	84	------	2,559	194	388,344	91,734	480,078	15,752	------	495,830
Georgia	5	1	------	6	16	5	21	2	------	23	150	2,462	801	3,263	180	------	3,443
Illinois	82	87	------	169	6,772	2,032	8,804	3,300	------	12,104	208	1,329,034	411,102	1,740,136	774,309	------	2,514,445
Indiana	40	47	------	87	1,745	586	2,331	1,622	------	3,953	210	329,699	111,472	441,171	390,448	------	831,619
Iowa	33	29	------	62	353	53	406	220	------	626	181	52,817	8,155	60,972	52,524	------	113,496
Kansas	4	24	------	28	39	5	44	261	------	305	182	4,508	564	5,072	50,548	------	55,620
Kentucky	1,979	150	60	2,189	26,790	6,176	32,966	2,696	538	36,200	179	4,747,659	1,124,612	5,872,271	542,232	69,454	6,483,957
Maryland	76	33	------	109	374	89	463	142	------	605	181	68,982	17,021	86,003	23,580	------	109,583
Missouri	24	36	------	60	247	46	293	700	------	993	200	29,913	6,069	35,982	162,498	------	198,480
Montana	28	9	------	37	161	70	231	60	------	291	151	24,419	10,915	35,334	8,586	------	43,920
New Mexico	35	2	------	37	155	46	201	10	------	211	211	32,967	9,462	42,429	2,039	------	44,468
North Dakota	7	44	------	51	14	------	14	355	------	369	193	1,400	------	1,400	69,911	------	71,311
Ohio	177	255	43	475	4,479	1,419	5,898	4,357	177	10,432	227	934,088	302,442	1,236,530	1,098,153	32,900	2,367,583
Oklahoma	15	21	------	36	480	90	570	390	------	960	223	99,266	18,482	117,748	96,085	------	213,833
Oregon	1	------	------	1	6	2	8	------	------	8	66	396	132	528	------	------	528
Pennsylvania (bituminous)	1,036	689	45	1,770	32,560	7,446	40,006	5,970	145	46,121	209	6,727,364	1,562,144	8,289,508	1,341,278	18,070	9,648,856
South Dakota	1	2	------	3	1	------	1	10	------	11	224	10	------	10	2,455	------	2,465
Tennessee	543	84	8	635	3,795	914	4,709	871	42	5,622	146	539,373	128,309	667,682	146,877	7,096	821,655
Texas	------	2	------	2	------	------	------	138	------	138	309	------	------	------	42,700	------	42,700
Utah	48	------	------	48	2,263	749	3,012	------	------	3,012	223	503,037	168,103	671,140	------	------	671,140
Virginia	1,178	34	23	1,235	11,615	2,743	14,358	347	141	14,846	210	2,437,011	578,541	3,015,552	77,224	29,609	3,122,385
Washington	12	1	------	13	237	102	339	10	------	349	202	48,429	20,828	69,257	1,120	------	70,377
West Virginia	1,377	151	94	1,622	56,541	13,448	69,989	2,719	826	73,534	218	12,336,156	2,967,600	15,303,756	588,311	140,462	16,032,529
Wyoming	21	8	------	29	603	210	813	209	------	1,022	126	54,392	22,912	77,304	51,394	------	128,698
Total bituminous	7,078	1,765	274	9,117	158,258	38,448	196,706	25,321	1,873	223,900	206	32,097,309	7,912,216	40,009,525	5,712,718	297,964	46,020,207
Pennsylvania (anthracite) [2]	1,259	178	------	1,437	16,822	9,457	26,279	4,546	------	30,825	196	3,273,223	1,844,478	5,117,701	939,404	------	6,057,105
Grand total [3]	8,337	1,943	274	10,554	175,080	47,905	222,985	29,867	1,873	254,725	204	35,370,532	9,756,694	45,127,226	6,652,122	297,964	52,077,312

See footnotes at end of table.

TABLE 38.—*Injury experience, employment, and production data on coal mines in the United States, by States and general work location, 1957*—Continued

State	Man-hours of work						Production, short tons				Tons per man-hour			
	Underground mines			Strip mines	Auger mines	Total	Under-ground mines [1]	Strip mines	Auger mines	Total	Under-ground mines [1]	Strip mines	Auger mines	Total
	Under-ground	Surface [1]	Total											
Alabama	10, 535, 956	2, 354, 916	12, 890, 872	951, 507	2, 710	13, 845, 089	11, 201, 340	2, 109, 264	8, 899	13, 319, 503	0. 87	2. 22	3. 28	0. 96
Alaska	189, 512	185, 948	375, 460	254, 116		629, 576	297, 744	544, 591		842, 335	. 79	2. 14		1. 34
Arizona	24, 216	5, 520	29, 736			29, 736	(3)			(3)	(3)			(3)
Arkansas	465, 540	73, 214	538, 754	156, 789		695, 543	(3)	(3)		(3)	(3)	(3)		(3)
California				4, 280		4, 280		(3)		(3)		(3)		(3)
Colorado	3, 096, 648	682, 656	3, 779, 304	117, 186		3, 896, 490	2, 959, 358	363, 122		3, 322, 480	. 78	3. 10		. 85
Georgia	19, 696	6, 408	26, 104	1, 440		27, 544	(3)	(3)		(3)	(3)	(3)		(3)
Illinois	10, 652, 468	3, 090, 385	13, 742, 853	5, 845, 859		19, 588, 712	26, 894, 523	19, 912, 432		46, 806, 955	1. 96	3. 41		2. 39
Indiana	2, 617, 274	834, 880	3, 452, 154	2, 931, 078		6, 383, 232	4, 941, 034	10, 781, 409		15, 722, 443	1. 43	3. 68		2. 46
Iowa	410, 936	63, 299	474, 235	427, 974		902, 209	268, 362	999, 385		1, 267, 747	. 56	2. 34		1. 40
Kansas	35, 203	4, 389	39, 592	373, 358		412, 950	12, 275	739, 757		752, 032	. 31	1. 98		1. 82
Kentucky	37, 785, 233	8, 535, 008	46, 320, 241	4, 194, 634	547, 967	51, 062, 842	52, 839, 457	17, 104, 570	1, 623, 526	71, 567, 553	1. 14	4. 08	2. 96	1. 40
Maryland	540, 309	131, 838	672, 147	187, 150		859, 297	323, 756	423, 567		747, 323	. 48	2. 26		. 87
Missouri	232, 376	46, 878	279, 254	1, 215, 589		1, 494, 843	105, 106	2, 842, 427		2, 947, 533	. 38	2. 34		1. 97
Montana	193, 713	81, 186	274, 899	67, 794		342, 693	(3)	(3)		(3)	(3)	(3)		(3)
New Mexico	251, 488	70, 749	322, 237	16, 312		338, 549	(3)	(3)		(3)	(3)	(3)		(3)
North Dakota	10, 960		10, 960	539, 781		550, 741	6, 524	2, 522, 670		2, 529, 194	. 60	4. 67		4. 59
Ohio	7, 373, 422	2, 243, 274	9, 616, 696	8, 863, 575	261, 371	18, 741, 642	12, 108, 019	23, 957, 832	1, 150, 928	37, 216, 779	1. 26	2. 70	4. 40	1. 98
Oklahoma	793, 449	134, 886	928, 335	766, 033		1, 694, 368	444, 837	1, 638, 840		2, 083, 677	. 48	2. 14		1. 23
Oregon	3, 168	1, 056	4, 224			4, 224	(3)			(3)	(3)			(3)
Pennsylvania (bituminous)	53, 952, 227	11, 643, 413	65, 595, 640	11, 171, 705	150, 409	76, 917, 754	63, 866, 692	21, 236, 521	367, 459	85, 470, 672	. 97	1. 90	2. 44	1. 11
South Dakota	40		40	19, 460		19, 500	(3)	(3)		(3)	(3)	(3)		(3)
Tennessee	4, 252, 471	995, 892	5, 248, 363	1, 171, 241	56, 179	6, 475, 783	4, 337, 801	2, 676, 475	287, 059	7, 301, 335	. 83	2. 28	5. 11	1. 13
Texas				344, 435		344, 435		(3)		(3)		(3)		(3)
Utah	4, 020, 017	1, 239, 439	5, 259, 456			5, 259, 456	6, 884, 615			6, 884, 615	1. 31			1. 31
Virginia	19, 490, 717	4, 495, 456	23, 986, 173	590, 318	235, 033	24, 811, 524	24, 509, 268	1, 644, 518	576, 481	26, 730, 267	1. 02	2. 78	2. 45	1. 08
Washington	387, 064	152, 003	539, 067	8, 122		547, 189	(3)	(3)		(3)	(3)	(3)		(3)
West Virginia	98, 930, 930	22, 238, 127	121, 169, 057	4, 752, 727	1, 105, 114	127, 026, 898	144, 222, 101	11, 698, 139	4, 003, 391	159, 923, 631	1. 19	2. 46	3. 62	1. 26
Wyoming	433, 817	171, 816	605, 633	383, 179		988, 812	651, 730	1, 464, 132		2, 115, 862	1. 08	3. 82		2. 14
All other [3]							1, 013, 238	610, 126		1, 623, 364				
Total bituminous	256, 698, 850	59, 482, 636	316, 181, 486	45, 355, 642	2, 358, 783	363, 895, 911	357, 887, 780	123, 269, 777	8, 017, 743	489, 175, 300	1. 13	2. 72	3. 40	1. 34
Pennsylvania (anthracite)	23, 915, 335	13, 700, 669	37, 616, 004	6, 695, 265		44, 311, 269	17, 991, 518	7, 538, 873		25, 530, 391	. 48	1. 13		. 58
Grand total	280, 614, 185	73, 183, 305	353, 797, 490	52, 050, 907	2, 358, 783	408, 207, 180	375, 879, 298	130, 808, 650	8, 017, 743	514, 705, 691	1. 06	2. 51	3. 40	1. 26

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[1] Includes culm banks, dredges, preparation plants, and general repair shops at Pennsylvania anthracite mines.

[2] Number of mines does not include 87 culm banks, 18 dredges, 147 preparation plants, and 10 general repair shops.

[3] Production included in "all other."

TABLE 39.—*Number of fatal injuries at coal mines in the United States, by States, general work location, and principal causes, 1957*

State	Underground																			
	Falls of roof	Roof falls due to cars or machines knocking out support	**Falls of face**	From pressure bumps or bursts	**Rushes, rolls, or slides**	**Other falling materials or objects**	**Slips or falls of persons**	**Handling materials**	**Handtools**	Stepping or kneeling on sharp or loose objects	Striking or bumping against objects	**Haulage**	**Explosions of gas or coal dust**	**Explosives**	**Electricity**	**Machinery**	**Suffocation**	**Mine fires**	**All other**	**Total underground**
Alabama	4											1								5
Alaska	1												5							6
Arizona																				
Arkansas													4		1					5
California																				
Colorado																				
Georgia																				
Illinois	13		1									2				2				18
Indiana	1											1								2
Iowa	2	1																		3
Kansas																				
Kentucky	37	1		2								8		2	4	1				55
Maryland																				
Missouri																				
Montana	1																			1
New Mexico																				
North Dakota																				
Ohio	3															1				4
Oklahoma	1																			1
Oregon																				
Pennsylvania (bituminous)	21	1										12	6	1	1	2	2	1		47
South Dakota																				
Tennessee	6											1								7
Texas																				
Utah	8			7												1				16
Virginia	28											3		1		2				34
Washington																				
West Virginia	69	1	1	8								25	48	3	5	7		1		168
Wyoming																1				1
Total bituminous	195	4	2	17								53	63	7	11	17	2	2		373
Pennsylvania (anthracite)	27		3		1		1					5	3	4	1		3			48
Grand total	222	4	5	17	1		1					58	66	11	12	17	5	2		421

TABLE 39.—*Number of fatal injuries at coal mines in the United States, by States, general work location, and principal causes, 1957*—Continued

State	Shaft and slope																			
	Falls of roof	Roof falls due to cars or machines knocking out support	Falls of face	Rushes, rolls, or slides	Other falling materials or objects	Slips or falls of persons	Handling materials	Handtools	Stepping or kneeling on sharp or loose objects	Striking or bumping against objects	Haulage	Explosion of gas or coal dust	Explosives	Electricity	Machinery	Suffocation	Mine fires	All other	Total shaft and slope	Total underground (including shaft and slope)
Alabama																				5
Alaska																				6
Arizona																				
Arkansas																				5
California																				
Colorado																				
Georgia																				
Illinois																				18
Indiana																				2
Iowa						1													1	4
Kansas																				
Kentucky																				55
Maryland																				
Missouri																				
Montana																				1
New Mexico																				
North Dakota																				
Ohio																				4
Oklahoma																				1
Oregon																				
Pennsylvania (bituminous)																				47
South Dakota																				
Tennessee																				7
Texas																				
Utah	1																		1	17
Virginia																				34
Washington																				
West Virginia																				168
Wyoming																				1
Total bituminous	1					1													2	375
Pennsylvania (anthracite)						1													1	49
Grand total	1					2													3	424

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TABLE 39.—*Number of fatal injuries at coal mines in the United States, by States, general work location, and principal causes, 1957*—Continued

State	Surface															
	Rushes, rolls or slides	Falling materials or objects	Slips or falls of persons	Handling materials	Handtools	Stepping or kneeling on sharp or loose objects	Striking or bumping against objects	Haulage	Explosions of gas or coal dust	Explosives	Electricity	Machinery	Suffocation	Fires	All other	Total surface
Alabama																
Alaska																
Arizona																
Arkansas																
California																
Colorado																
Georgia																
Illinois																
Indiana																
Iowa																
Kansas																
Kentucky								2				1			1	4
Maryland																
Missouri																
Montana																
New Mexico																
North Dakota																
Ohio																
Oklahoma																
Oregon																
Pennsylvania (bituminous)								1			1				1	3
South Dakota																
Tennessee																
Texas																
Utah									1							1
Virginia				1				1			1					3
Washington																
West Virginia				1				5			2	5			3	16
Wyoming																
Total bituminous				2				9	1		4	6			5	27
Pennsylvania (anthracite) [1]																
Grand total [1]				2				9	1		4	6			5	27

[1] Includes shops, and yards at Pennsylvania anthracite mines.

TABLE 39.—*Number of fatal injuries at coal mines in the United States, by States, general work location, and principal causes, 1957*—Continued

State	Strip																
	Falls or slides of coal or overburden	Rushes, rolls, or slides	Other falling materials or objects	Slips or falls of persons	Handling materials	Handtools	Stepping or kneeling on sharp or loose objects	Striking or bumping against objects	Haulage	Explosions of gas or coal dust	Explosives	Electricity	Machinery	Suffocation	Fires	All other	Total strip
Alabama	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Alaska	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Arizona	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Arkansas	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
California	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Colorado	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Georgia	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Illinois	------	------	------	------	------	------	------	------	2	------	------	------	1	------	------	------	3
Indiana	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	1
Iowa	------	------	------	------	------	------	------	------	------	------	------	1	------	------	------	------	1
Kansas	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	1
Kentucky	1	------	------	------	------	------	------	------	1	------	------	------	------	------	------	------	2
Maryland	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Missouri	------	------	------	------	1	------	------	------	------	------	------	------	------	------	------	------	1
Montana	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
New Mexico	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
North Dakota	------	------	------	1	------	------	------	------	------	------	------	------	------	------	------	------	1
Ohio	------	------	------	------	------	------	------	------	1	------	------	------	1	------	1	------	3
Oklahoma	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Oregon	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Pennsylvania (bituminous)	------	------	------	------	------	------	------	------	2	------	------	1	------	------	------	------	3
South Dakota	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Tennessee	------	------	------	------	------	------	------	------	1	------	------	------	------	------	------	------	1
Texas	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Utah	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Virginia	1	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	1
Washington	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
West Virginia	------	------	------	------	------	------	------	------	1	------	------	------	2	------	------	------	3
Wyoming	------	------	------	------	------	------	------	------	------	------	------	------	1	------	------	------	1
Total bituminous	4	------	------	1	1	------	------	------	8	------	------	2	5	------	1	------	22
Pennsylvania (anthracite)	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Grand total	4	------	------	1	1	------	------	------	8	------	------	2	5	------	1	------	22

TABLE 39.—*Number of fatal injuries at coal mines in the United States, by States, general work location, and principal causes, 1957*—Continued

State	Auger																				
	Falls or slides of coal or overburden	Rushes, rolls, or slides	Other falling materials or objects	Slips or falls of persons	Handling materials	Handtools	Stepping or kneeling on sharp or loose objects	Striking or bumping against objects	Haulage	Explosions of gas or coal dust	Explosives	Electricity	Machinery	Suffocation	Fires	All other	Total auger	Culm banks	Dredges	Preparation plants	Total, all mines
Alabama	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5
Alaska	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	6
Arizona	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Arkansas	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5
California	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Colorado	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Georgia	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Illinois	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	21
Indiana	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	3
Iowa	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	5
Kansas	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1
Kentucky	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	61
Maryland	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Missouri	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1
Montana	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1
New Mexico	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
North Dakota	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1
Ohio	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	7
Oklahoma	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1
Oregon	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Pennsylvania (bituminous)	1	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	1	----	----	----	54
South Dakota	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Tennessee	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	8
Texas	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
Utah	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	18
Virginia	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	38
Washington	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----
West Virginia	----	----	----	----	----	----	----	----	----	1	----	----	1	----	----	----	2	----	----	----	189
Wyoming	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2
Total bituminous	1	----	----	----	----	----	----	----	----	1	----	----	1	----	----	----	3	----	----	----	427
Pennsylvania (anthracite)	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	----	2	51
Grand total	1	----	----	----	----	----	----	----	----	1	----	----	1	----	----	----	3	----	----	2	478

TABLE 40.—*Number of nonfatal injuries at coal mines in the United States, by States,* general work *location, and principal causes, 1957*

State	Underground																			
	Falls of roof	Roof falls due to cars or machines knocking out support	Falls of face	From pressure bumps or bursts	Rushes, rolls, or slides	Other falling materials or objects	Slips or falls of persons	Handling materials	Handtools	Stepping or kneeling on sharp or loose objects	Striking or bumping against objects	Haulage	Explosions of gas or coal dust	Explosives	Electricity	Machinery	Suffocation	Mine fires	All other	Total underground
Alabama	24	----	5	----	----	2	3	24	8	2	----	40	----	4	2	30	----	----	33	177
Alaska	4	----	1	2	7	3	6	5	5	----	----	3	1	----	1	3	----	----	1	42
Arizona																				
Arkansas	8	----	2	----	----	----	----	5	2	----	----	1	----	----	----	4	----	----	1	23
California																				
Colorado	14	----	8	3	2	6	13	19	8	3	----	14	----	3	1	28	----	----	7	129
Georgia																				
Illinois	114	1	26	----	1	16	44	89	30	19	3	92	----	20	31	111	1	1	7	606
Indiana	32	----	13	----	2	8	12	42	8	6	3	38	----	11	14	35	1	1	5	231
Iowa	2	----	----	----	----	----	1	3	1	----	----	3	----	----	----	1	----	----	----	11
Kansas																				
Kentucky	309	6	61	12	5	63	45	354	74	37	9	492	----	29	91	330	1	1	122	2,041
Maryland	5	1	3	----	----	----	1	1	2	3	1	5	----	----	1	7	----	----	----	30
Missouri	----	----	----	----	----	----	----	----	1	----	----	----	----	----	----	----	----	----	----	1
Montana	1	----	1	----	----	1	----	3	1	----	----	2	----	----	----	2	----	----	----	11
New Mexico	4	----	1	----	----	----	----	----	----	1	----	----	----	----	1	3	----	----	----	10
North Dakota																				
Ohio	59	1	4	----	----	5	17	59	7	2	----	53	----	7	9	44	----	----	15	282
Oklahoma	18	----	2	----	----	1	1	56	6	16	2	4	----	1	2	17	----	----	3	129
Oregon																				
Pennsylvania (bituminous)	173	4	80	----	1	46	90	361	89	16	10	361	9	18	40	258	----	2	30	1,588
South Dakota																				
Tennessee	38	----	5	----	----	2	----	33	5	6	1	43	----	1	7	29	----	----	14	184
Texas																				
Utah	27	1	14	14	----	14	9	17	6	11	----	29	----	2	3	37	----	----	3	187
Virginia	166	1	38	6	----	15	21	151	49	21	8	216	----	6	19	124	----	2	43	886
Washington	13	----	3	----	----	1	3	21	1	1	----	3	----	----	----	2	----	----	----	47
West Virginia	1,012	30	270	24	4	139	202	1,417	263	117	50	1,318	1	86	279	1,094	----	16	116	6,438
Wyoming	----	----	2	----	1	----	----	3	2	----	----	3	----	1	----	3	----	----	----	16
Total bituminous	2,023	45	539	61	23	322	468	2,663	568	261	87	2,720	11	189	501	2,162	3	23	400	13,069
Pennsylvania (anthracite)	74	----	94	15	79	78	317	736	171	77	10	233	6	10	26	141	1	4	25	2,097
Grand total	2,097	45	633	76	102	400	785	3,399	739	338	97	2,953	17	199	527	2,303	4	27	425	15,166

TABLE 40.—*Number of nonfatal injuries at coal mines in the United States, by States, general work location, and principal causes, 1957*—Continued

State	Shaft and slope																			
	Falls of roof	Roof falls due to cars or machines knocking out support	Falls of face	Rushes, rolls, or slides	Other falling materials or objects	Slips or falls of persons	Handling materials	Handtools	Stepping or kneeling on sharp or loose objects	Striking or bumping against objects	Haulage	Explosions of gas or coal dust	Explosives	Electricity	Machinery	Suffocation	Mine fires	All other	Total shaft and slope	Total underground (including shaft and slope)
Alabama	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	177
Alaska	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	42
Arizona	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Arkansas	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	23
California	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Colorado	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	129
Georgia	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Illinois	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	1	607
Indiana	---	---	---	---	---	---	1	---	---	---	1	---	---	---	---	---	---	---	2	233
Iowa	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	11
Kansas	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Kentucky	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	2,041
Maryland	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	30
Missouri	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1
Montana	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	11
New Mexico	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	10
North Dakota	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Ohio	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	282
Oklahoma	1	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	1	130
Oregon	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Pennsylvania (bituminous)	---	---	---	---	---	1	1	---	---	1	2	---	---	---	---	---	---	---	5	1,593
South Dakota	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Tennessee	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	184
Texas	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---
Utah	---	---	---	---	---	---	---	---	---	---	1	---	---	---	---	---	---	---	1	188
Virginia	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	886
Washington	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	47
West Virginia	---	---	---	---	1	3	3	2	---	---	3	---	---	---	---	---	---	---	12	6,450
Wyoming	---	---	---	---	---	---	1	---	---	---	---	---	---	---	---	---	---	---	1	17
Total bituminous	1	---	---	---	1	4	6	2	---	1	8	---	---	---	---	---	---	---	23	13,092
Pennsylvania (anthracite)	---	2	1	4	3	13	14	2	3	---	39	---	---	---	---	---	---	6	87	2,184
Grand total	1	2	1	4	4	17	20	4	3	1	47	---	---	---	---	---	---	6	110	15,276

TABLE 40.—*Number of nonfatal injuries at coal mines in the United States, by States, general work location, and principal causes, 1957*—Continued

State	Surface															
	Rushes, rolls, or slides	Falling materials or objects	Slips or falls of persons	Handling materials	Handtools	Stepping or kneeling on sharp or loose objects	Striking or bumping against objects	Haulage	Explosions of gas or coal dust	Explosives	Electricity	Machinery	Suffocation	Fires	All other	Total surface
Alabama	------	1	1	5	------	1	------	5	------	------	------	3	------	------	------	16
Alaska	------	------	1	6	3	1	------	1	------	------	------	1	------	------	2	15
Arizona	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Arkansas	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
California	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Colorado	1	------	6	1	1	------	------	6	------	------	------	2	------	------	1	18
Georgia	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Illinois	------	1	9	12	5	------	1	13	------	------	2	10	------	1	6	60
Indiana	------	------	9	3	2	------	------	5	------	------	------	2	1	------	3	25
Iowa	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Kansas	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Kentucky	------	9	26	62	14	5	1	68	1	2	7	19	------	1	11	226
Maryland	------	------	1	------	1	------	------	2	------	------	------	------	------	------	------	4
Missouri	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Montana	------	------	------	------	------	------	------	1	------	------	------	------	------	------	------	1
New Mexico	------	------	1	------	------	------	------	2	------	------	------	------	------	------	------	3
North Dakota	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Ohio	------	2	9	10	2	1	1	11	------	1	------	2	------	------	3	42
Oklahoma	------	------	------	------	------	------	------	------	------	------	1	------	------	------	------	1
Oregon	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Pennsylvania (bituminous)	------	5	25	36	14	5	1	54	------	------	12	18	------	------	5	175
South Dakota	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Tennessee	------	1	7	6	1	------	------	7	------	------	------	2	------	------	------	24
Texas	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------	------
Utah	1	1	2	7	3	1	------	5	1	------	1	6	------	2	1	31
Virginia	------	------	16	45	10	3	------	48	------	------	1	6	------	------	7	136
Washington	------	------	2	3	1	------	------	1	------	------	------	1	------	------	------	8
West Virginia	------	21	109	241	56	7	5	255	------	3	19	64	------	2	68	850
Wyoming	------	------	------	2	------	------	------	------	------	------	------	2	------	------	1	5
Total bituminous	2	41	224	439	113	24	9	484	2	6	43	138	1	6	108	1,640
Pennsylvania (anthracite) [1]	1	1	30	50	18	3	------	36	------	------	1	7	------	------	13	160
Grand total [1]	3	42	254	489	131	27	9	520	2	6	44	145	1	6	121	1,800

[1] Includes shops and yards at Pennsylvania anthracite mines.

TABLE 40.—*Number of nonfatal injuries at coal mines in the United States, by States, general work location, and principal causes, 1957*—Continued

State	Strip																
	Falls or slides of coal or overburden	Brushes, rolls, or slides	Other falling materials or objects	Slips or falls of persons	Handling materials	Handtools	Stepping or kneeling on sharp or loose objects	Striking or bumping against objects	Haulage	Explosions of gas or coal dust	Explosives	Electricity	Machinery	Suffocation	Fires	All other	Total strip
Alabama			1		2	2							3			3	11
Alaska		1		4	7	3			6				6			1	28
Arizona																	
Arkansas							1						1				2
California																	
Colorado				1					1							1	3
Georgia																	
Illinois	2		4	23	45	12	3	1	33				20			10	153
Indiana	1		2	15	14	4	3		12		4	1	15			5	76
Iowa			1	2	1	1										1	6
Kansas				1		1					1						3
Kentucky	2	3	4	18	28	12	4	1	19			5	28		3	13	140
Maryland				1									2				3
Missouri	2	1	8	11	14	3	3		2				7			2	53
Montana				2													2
New Mexico																	
North Dakota				3	4	1	1		3				3		1	1	17
Ohio	4		3	19	15	3	1		15		1	1	21		1	10	94
Oklahoma					3		1		1		1		4			1	11
Oregon																	
Pennsylvania (bituminous)	8	1	3	48	58	19	5	2	39				78		5	21	287
South Dakota													1				1
Tennessee	2			4	7	1	1		5				1			2	23
Texas					2								2				4
Utah																	
Virginia			1	2	1				1				8			1	14
Washington																	
West Virginia	6	1	5	22	30	20	2		24		5	1	37		5	13	171
Wyoming					1				1				1			2	5
Total bituminous	27	7	32	176	232	82	25	4	162	------	12	8	238	------	15	87	1,107
Pennsylvania (anthracite)	2	1	8	35	56	13	7	------	52	------	1	------	44	------	3	10	232
Grand total	29	8	40	211	288	95	32	4	214	------	13	8	282	------	18	97	1,339

TABLE 40.—*Number of nonfatal injuries at coal mines in the United States, by States, general work location, and principal causes, 1957*—Continued

State	Auger																				
	Falls or slides of coal or overburden	Rushes, rolls, or slides	Other falling materials or objects	Slips or falls of persons	Handling materials	Handtools	Stepping or kneeling on sharp or loose objects	Striking or bumping against objects	Haulage	Explosions of gas or coal dust	Explosives	Electricity	Machinery	Suffocation	Fires	All other	Total auger	Culm banks	Dredges	Preparation plants	Total all mines
Alabama																					204
Alaska																					55
Arizona																					
Arkansas																					25
California																					
Colorado																					150
Georgia																					
Illinois																					830
Indiana																					354
Iowa																					17
Kansas																					3
Kentucky	1			1	3	1			2				4		2		14				2,421
Maryland																					37
Missouri																					54
Montana																					14
New Mexico																					13
North Dakota																					17
Ohio													1				1				419
Oklahoma																					142
Oregon																					
Pennsylvania (bituminous)													2			1	3				2,058
South Dakota																					1
Tennessee													2				2				233
Texas																					4
Utah																					219
Virginia									2				3				5				1,041
Washington																					55
West Virginia	4		1	2	14	2	1		8	3	1		13			2	51				7,522
Wyoming																					27
Total bituminous	5		1	3	17	3	1		12	3	1		25		2	3	76				15,915
Pennsylvania (anthracite)																		71	4	226	2,877
Grand total	5		1	3	17	3	1		12	3	1		25		2	3	76	71	4	226	18,792

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TABLE 41.—*Number of injuries, by percentage distribution, average severity, and injury rates at coal mines in the United States, by States and degree of injury, 1957*

State	Number of injuries						Distribution of all injuries, per cent [1]	Average severity [2]			Time-loss rates [3]				Frequency rates [4]			
	Fatal	Nonfatal				All injuries		Permanent partial	Temporary total	All injuries	Per million man-hours		Per million tons		Per million man-hours		Per million tons	
		Permanent		Temporary total	Total nonfatal						Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal
		Total	Partial															
Underground mines:																		
Underground (including shaft and slope):																		
Alabama	5		22	155	177	182	1.4	549	37	263	2,847	1,691	2,678	1,591	0.47	16.80	.45	15.80
Alaska	6			42	42	48	.4		31	778	189,962	6,970	120,909	4,437	31.66	221.62	20.15	141.06
Arizona																		
Arkansas	5		1	22	23	28	.2	2,400	48	1,195	64,441	7,426	(6)	(6)	10.74	49.40	(6)	(6)
California																		
Colorado		1	4	124	129	129	1.0	838	28	99		4,124		4,315		41.66		43.59
Georgia																		
Illinois	18	1	11	595	607	625	4.6	517	33	223	10,138	2,943	4,016	1,166	1.69	56.98	.67	22.57
Indiana	2		1	232	233	235	1.7	200	29	81	4,585	2,669	2,429	1,414	.76	89.02	.40	47.16
Iowa	4			11	11	15	.1		29	1,622	58,403	788	89,431	1,207	9.73	26.77	14.90	40.99
Kansas																		
Kentucky	55	6	56	1,979	2,041	2,096	15.6	638	33	223	8,734	3,630	6,245	2,596	1.46	54.02	1.04	38.63
Maryland				30	30	30	.2		37	37		2,034		3,394		55.52		92.66
Missouri				1	1	1	(5)		13	13		56		124		4.30		9.51
Montana	1			11	11	12	.1		53	548	30,974	3,010	(6)	(6)	5.16	56.78	(6)	(6)
New Mexico				10	10	10	.1		63	63		2,493		(6)		39.76		(6)
North Dakota																		
Ohio	4		10	272	282	286	2.1	581	42	144	3,255	2,331	1,982	1,419	.54	38.24	.33	23.29
Oklahoma	1			130	130	131	1.0		18	64	7,562	2,923	13,488	5,213	1.26	163.84	2.25	292.24
Oregon																		
Pennsylvania (bituminous)	47	2	50	1,541	1,593	1,640	12.2	425	42	231	5,227	1,802	4,415	1,523	.87	29.53	.74	24.94
South Dakota																		
Tennessee	7		5	179	184	191	1.4	715	37	274	9,877	2,417	9,682	2,370	1.65	43.27	1.61	42.42
Texas																		
Utah	17		5	183	188	205	1.5	1,022	40	558	25,373	3,072	14,816	1,794	4.23	46.76	2.47	27.31
Virginia	34		19	867	886	920	6.8	533	32	263	10,466	1,965	8,323	1,562	1.74	45.46	1.39	36.15
Washington			1	46	47	47	.3	52	49	49		5,942		(6)		121.43		(6)
West Virginia	168	1	122	6,327	6,450	6,618	49.1	496	30	191	10,189	2,566	6,989	1,760	1.70	65.20	1.16	44.72
Wyoming	1		1	16	17	18	.1	700	42	409	13,831	3,158	9,206	2,102	2.31	39.19	1.53	26.08
Total bituminous	375	11	308	12,773	13,092	13,467		541	32	215	8,765	2,527	6,287	1,813	1.46	51.00	1.05	36.58
Pennsylvania (anthracite)	49	3	22	2,159	2,184	2,233		592	26	171	12,293	3,665	22,976	6,849	2.05	91.32	3.83	170.68
Total underground (including shaft and slope)	424	14	330	14,932	15,276	15,700		544	32	209	9,066	2,624	6,863	1,986	1.51	54.44	1.14	41.21
Surface:																		
Alabama				16	16	16	1.0		32	32		221				6.79		
Alaska				15	15	15	.9		6	6		527				80.67		
Arizona																		
Arkansas																		
California																		
Colorado				18	18	18	1.1		16	16		436				26.37		
Georgia																		
Illinois		1	2	57	60	60	3.6	125	22	125		2,421				19.42		
Indiana			1	24	25	25	1.5	3,600	46	188		5,636				29.94		
Iowa																		
Kansas																		
Kentucky	4		16	210	226	230	13.8	521	31	169	2,812	1,740			.47	26.48		
Maryland				4	4	4	.2		11	11		334				30.34		
Missouri																		
Montana				1	1	1	.1		34	34		419				12.32		
New Mexico				3	3	3	.2		44	44		1,866				42.40		
North Dakota																		

See footnotes at end of table.

TABLE 41.—*Number of injuries, by percentage distribution, average severity, and injury rates at coal mines in the United States, by States and degree of injury, 1957*—Continued

State	Number of injuries						Distribution of all injuries, per cent [1]	Average severity [2]			Time-loss rates [3]				Frequency rates [4]			
	Fatal	Nonfatal				All injuries		Permanent partial	Temporary total	All injuries	Per million man-hours		Per million tons		Per million man-hours		Per million tons	
		Permanent		Temporary total	Total nonfatal						Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal	Fatal	Nonfatal
		Total	Partial															
Surface—Continued																		
Ohio			1	41	42	42	2.5	240	41	46		854				18.72		
Oklahoma				1	1	1	.1		5	5		37				7.41		
Oregon																		
Pennsylvania (bituminous)	3		7	168	175	178	10.7	1,053	32	173	1,546	1,102			.26	15.03		
South Dakota																		
Tennessee				24	24	24	1.4		34	34		816				24.10		
Texas																		
Utah	1		3	28	31	32	1.9	617	52	290	4,841	2,661			.81	25.01		
Virginia	3		7	129	136	139	8.3	357	26	171	4,004	1,296			.67	30.25		
Washington				8	8	8	.5		15	15		789				52.63		
West Virginia	16		26	824	850	866	51.9	678	29	159	4,317	1,863			.72	38.22		
Wyoming			1	4	5	5	.3	200	67	94		2,730				29.10		
Total bituminous	27	1	64	1,575	1,640	1,667		656	30	154	2,723	1,595			.45	27.57		
Pennsylvania (anthracite) [7]	2		11	450	461	463		207	24	54	876	940			.14	33.65		
Total surface	29	1	75	2,025	2,101	2,130		590	28	132	2,378	1,472			.40	28.71		
Total underground mines:																		
Bituminous coal	402	12	372	14,348	14,732	15,134		561	32	208	7,628	2,352	6,740	2,078	1.27	46.59	1.12	41.16
Anthracite [7]	51	3	33	2,609	2,645	2,696		464	26	151	8,135	2,672	17,008	5,587	1.36	70.32	2.83	147.01
Total deep mines	453	15	405	16,957	17,377	17,830		553	31	200	7,682	2,386	7,231	2,246	1.28	49.12	1.20	46.23
Strip mines:																		
Alabama				11	11	11	1.0		44	44		503		227		11.56		
Alaska			1	27	28	28	2.5	2,400	24	109		12,006		5,602		110.18		
Arizona																		
Arkansas				2	2	2	.2		75	75		957		(6)		12.76		(6)
California																		
Colorado				3	3	3	.3		6	6		162		52		25.60		
Georgia																		
Illinois	3		1	152	153	156	13.8	700	22	141	3,079	692	904	203	.51	26.17		
Indiana	1		1	75	76	77	6.8	4,500	31	166	2,047	2,324	556	632	.34	25.93		
Iowa	1			6	6	7	.6		22	876	14,020	301	6,004	129	2.34	14.02		
Kansas	1		1	2	3	4	.4	1,800	23	1,962	16,070	4,944	8,111	2,495	2.68	8.04		
Kentucky	2		4	136	140	142	12.6	1,272	19	138	2,861	1,823	702	447	.48	33.38		
Maryland				3	3	3	.3		61	61		983		434		16.03		
Missouri	1		1	52	53	54	4.8	900	20	147	4,936	1,584	2,111	677	.82	43.60		
Montana			1	1	2	2	.2	123	24	74		2,168		(6)		29.50		(6)
New Mexico																		
North Dakota	1		2	15	17	18	1.6	375	21	392	11,116	1,967	2,378	421	1.85	31.49		
Ohio	3		2	92	94	97	8.6	388	30	222	2,031	398	751	147	.34	10.60		
Oklahoma				11	11	11	1.0		35	35		499		233		14.36		
Oregon																		
Pennsylvania (bituminous)	3		6	281	287	290	25.7	873	25	104	1,611	1,100	848	578	.27	25.69		
South Dakota				1	1	1	.1		16	16		822		(6)		51.39		(6)
Tennessee	1		1	22	23	24	2.1	100	25	278	5,123	564	2,242	246	.85	19.64		
Texas				4	4	4	.4		66	66		772		(6)		11.61		(6)
Utah																		
Virginia	1			14	14	15	1.3		19	418	10,164	456	3,648	164	1.69	23.72		
Washington																		

West Virginia	3		9	162	171	174	15.4	513	19	147	3,787	1,607	1,539	653	.63	35.68		
Wyoming	1			5	5	6	.5		46	1,039	15,658	605	4,098	158	2.61	13.05		
Total bituminous	22		30	1,077	1,107	1,129		900	24	164	2,910	1,164	1,071	428	.48	24.41	.18	8.98
Pennsylvania (anthracite)			2	230	232	232		350	26	29		1,002		890		34.65		30.77
Total strip mines	22		32	1,307	1,339	1,361		865	24	141	2,536	1,143	1,009	455	.42	25.72	.17	10.24
Auger mines:																		
Alabama																		
Kentucky			1	13	14	14	17.7	300	17	38		960		324		25.55		8.62
Ohio				1	1	1	1.3		17	17		65		15		3.82		.87
Pennsylvania	1			3	3	4	5.1		10	1,508	39,891	199	16,328	82	6.65	19.94	2.72	8.16
Tennessee				2	2	2	2.5		116	116		4,112		805		35.60		6.97
Virginia			1	4	5	5	6.3	30	43	40		855		349		21.27		8.67
West Virginia	2		1	50	51	53	67.1	600	29	265	10,859	1,840	2,997	508	1.81	46.15	.50	12.74
Total auger mines	3		3	73	76	79		310	29	266	7,631	1,288	2,245	379	1.27	32.22	.37	9.48
Total:																		
Alabama	5		22	182	204	209	1.3	549	37	234	2,167	1,359	2,252	1,413	.36	14.73	.38	15.32
Alaska	6		1	84	85	91	.6	2,000	25	445	57,181	7,100	42,738	5,307	9.53	135.01	7.12	100.91
Arizona																		
Arkansas	5		1	24	25	30	.2	2,400	50	1,120	43,132	5,186	(6)	(6)	7.19	35.94	(6)	(6)
California																		
Colorado		1	4	145	150	150	.9	838	26	87		3,359		3,939		38.50		45.15
Georgia																		
Illinois	21	2	14	804	820	841	5.1	474	30	201	6,432	2,189	2,692	916	1.07	41.86	.45	17.52
Indiana	3		3	331	334	337	2.1	2,767	31	108	2,820	2,899	1,145	1,177	.47	52.32	.19	21.24
Iowa	5			17	17	22	.1		27	1,384	33,252	502	23,664	357	5.54	18.84	3.94	13.41
Kansas	1		1	2	3	4	(5)	1,800	23	1,962	14,530	4,470	7,978	2,455	2.42	7.26	1.33	3.99
Kentucky	61	6	77	2,338	2,421	2,482	15.2	642	32	212	7,168	3,137	5,114	2,238	1.19	47.41	.85	33.83
Maryland				37	37	37	.2		36	36		1,544		1,776		43.06		49.51
Missouri	1		1	53	54	55	.3	900	20	144	4,014	1,296	2,036	657	.67	36.12	.34	18.32
Montana	1		1	13	14	15	.1	123	49	451	17,508	2,229	(6)	(6)	2.92	40.85	(6)	(6)
New Mexico				13	13	13	.1		58	58		2,242		(6)		38.40		(6)
North Dakota	1		2	15	17	18	.1	375	21	392	10,894	1,928	2,372	420	1.82	30.87	.40	6.72
Ohio	7		13	406	419	426	2.6	525	39	152	2,241	1,208	1,128	609	.37	22.36	.19	11.26
Oklahoma	1			142	142	143	.9		19	61	3,541	1,597	2,880	1,299	.59	83.81	.48	68.15
Oregon																		
Pennsylvania (bituminous)	54	2	63	1,993	2,058	2,112	12.9	538	38	211	4,212	1,591	3,791	1,432	.70	26.76	.63	24.08
South Dakota				1	1	1	(5)		16	16		820		(6)		51.28		(6)
Tennessee	8		6	227	233	241	1.5	612	36	249	7,412	1,850	6,574	1,641	1.24	35.98	1.10	31.91
Texas				4	4	4	(5)		66	66		772		(6)		11.61		(6)
Utah	18		8	211	219	237	1.4	870	41	522	20,534	2,975	15,687	2,273	3.42	41.64	2.61	31.81
Virginia	38		27	1,014	1,041	1,079	6.6	469	31	253	9,189	1,797	8,530	1,668	1.53	41.96	1.42	38.94
Washington			1	54	55	55	.3	52	44	44		4,423		(6)		100.51		(6)
West Virginia	189	1	158	7,363	7,522	7,711	47.2	528	29	187	8,927	2,401	7,091	1,907	1.49	59.22	1.18	47.03
Wyoming	2		2	25	27	29	.2	450	47	485	12,136	2,094	5,671	979	2.02	27.30	.94	12.76
Total bituminous	427	12	405	15,498	15,915	16,342		584	32	206	7,040	2,197	5,237	1,634	1.17	43.74	.87	32.53
Pennsylvania (anthracite)	51	3	35	2,839	2,877	2,928		458	26	141	6,906	2,420	11,986	4,200	1.15	64.93	2.00	112.69
Total all mines	478	15	440	18,337	18,792	19,270		574	31	196	7,026	2,221	5,572	1,762	1.17	46.04	.93	36.51

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[1] All percentages are calculated separately, and total percentfrom ages may differ slightly the sums of the component percentages.

[2] A standard time-loss charge of 6,000 days is made against all fatal and permanent total injuries.

[3] Number of days charged per million man-hours.

[4] Number of injuries per million man-hours.

[5] Less than 0.05 percent.

[6] Production included in "all other" on table 38.

[7] Includes injury data for culm banks, dredges, preparation plants, and general repair shops.

MAJOR DISASTERS, 1948–57

A major disaster, as defined for the mineral industries, is a single accident in which, or as a result of which, five employees or more lose their lives. Four years in the past ten have been free of major disasters in the coal-mining industry. The first year in the history of the Bureau of Mines in which no disaster occurred was 1949, the second 1950, the third 1955, and the fourth 1956.

The industry suffered 5 major disasters in 1957 in which 64 men were killed—all at bituminous-coal mines. A total of 302 men were killed in major disasters in bituminous-coal and anthracite mines during the 10-year period 1948–57. Explosions of gas or dust was the leading cause of coal-mine disasters followed by falls of roof and face. During the 10-year period shown in table 42, 275 (91 percent) of the fatalities resulting in major disasters were caused by gas or dust explosions.

MAJOR-DISASTER DATA, 1948–57

TABLE 42.—*Major disasters* [1] *at coal mines in the United States*

Date		Mine name	Location of mine	Cause	Number killed
1948	Feb. 8	Sun Excelsior	Excelsior, Ark	Explosion	8
	May 20	No. 2	Dante, Va	Fall of face (bump)	6
	July 27	King	Princeton, Ind	Explosion	13
	July 30	Edgewater	Birmingham, Ala	do	11
	Aug. 6	No. 11 Berwind	Capels, W. Va	Fall of roof	6
	Nov. 4	Nethken	Kitzmiller, Md	Suffocation	5
1949	(2)				
1950	(2)				
1951	Jan. 18	Burning Springs	Kermit, W. Va	Explosion	11
	Mar. 29	Buttonwood [3]	Wilkes-Barre, Pa	do	5
	Oct. 15	Bunker	Cassville, W. Va	do	10
	Oct. 31	United Gas No. 1	United, W. Va	do	12
	Dec. 21	Orient No. 2	West Frankfort, Ill	do	119
1952	Feb. 2	Carpentertown	Mt. Pleasant, Pa	do	6
	Mar. 27	Holmes Slope [3]	Minersville, Pa	Inrush of water	5
1953	Mar. 30	O'Brien	Lovilia, Iowa	Explosion	5
1954	Nov. 13	Jamison No. 9	Farmington, W. Va	do	[4] 16
1955	(2)				
1956	(2)				
1957	Jan. 18	Evans Jones	Jonesville, Alaska	Explosion	5
	Feb. 4	No. 34	McDowell Co., W. Va	do	37
	Sept. 23	Marianna No. 58	Marianna, Pa	do	6
	Dec. 9	Glen Rogers No. 2	Glen Rogers, W. Va	Fall of face (bump)	5
	Dec. 27	(No. 31) Amonate Colliery	McDowell Co., W.Va	Explosion	11

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[1] A single accident in which 5 men or more are killed.
[2] No major disasters.
[3] Pennsylvania anthracite mines.
[4] Includes 1 on the surface.

HISTORICAL COAL-MINE-FATALITY EXPERIENCE

Historical data on coal-mine fatalities, from the earliest records through 1957, are presented in tables 43 through 47. Figures for 1910 to the present time represent the entire coal-mining industry. Figures for 1906 to 1909 include only data from coal-producing States that maintained records of fatal injuries.

The largest number of men killed in bituminous-coal mines during any calendar year was 2,534 in 1907, when 16 major disasters resulted in the death of 905 men. Falls of roof and face have been the leading cause of fatal injuries throughout the entire statistical history of the bituminous-coal industry. Haulage accidents have been the second leading cause of fatalities, except in years when one or more severe gas or dust explosions have caused the death of a large number of men. Since 1906, explosions of gas or dust have killed the third largest number of men.

Falls of roof and face have also been the principal cause of fatal injuries in anthracite mines. The largest number of men killed in the anthracite industry in any year was 708 in 1907; 42 percent of these fatalities were caused by falls of roof and face. Haulage accidents have been the second major cause of fatal injuries, except in years when one or more explosions of gas or dust have caused great loss of life.

TABLE 43.—*Coal-mine-fatality rates for the United States, 1870–1957* [1]

[Includes underground and surface injuries]

Year	Bituminous-coal mines			Anthracite mines			Total		
	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined
1870	--------	--------	--------	5. 93	--------	13. 47	5. 93	--------	13. 47
1871	--------	--------	--------	5. 60	--------	10. 86	5. 60	--------	10. 86
1872	--------	--------	--------	4. 98	--------	9. 20	4. 98	--------	9. 20
1873	--------	--------	--------	5. 46	--------	10. 06	5. 46	--------	10. 06
1874	2. 11	--------	8. 88	4. 33	--------	9. 31	3. 87	--------	9. 26
1875	1. 60	--------	4. 93	3. 37	--------	10. 50	3. 06	--------	9. 51
Average	--------	--------	--------	4. 58	--------	9. 94	4. 30	--------	9. 72
1876	1. 00	--------	4. 29	3. 22	--------	9. 96	2. 83	--------	9. 20
1877	2. 17	--------	5. 90	2. 90	--------	7. 56	2. 77	--------	7. 28
1878	1. 86	--------	3. 17	2. 92	--------	8. 62	2. 62	--------	6. 38
1879	2. 02	--------	3. 39	3. 81	--------	8. 67	3. 30	--------	6. 82
1880	1. 43	--------	2. 95	2. 75	--------	7. 05	2. 21	--------	5. 16
Average	1. 66	--------	3. 42	3. 12	--------	8. 31	2. 72	--------	6. 68
1881	1. 67	--------	2. 75	3. 59	4. 87	8. 55	2. 93	--------	6. 04
1882	1. 95	--------	3. 63	3. 54	4. 87	8. 29	2. 75	--------	5. 72
1883	3. 09	--------	4. 99	3. 53	4. 56	8. 40	3. 34	--------	6. 58
1884	2. 26	--------	4. 11	3. 28	5. 12	8. 94	2. 80	--------	6. 17
1885	1. 68	--------	3. 48	3. 58	5. 26	9. 36	2. 58	--------	5. 91
Average	2. 12	--------	3. 88	3. 50	4. 94	8. 72	2. 85	--------	6. 09
1886	1. 85	--------	3. 89	2. 70	4. 13	7. 12	2. 25	--------	5. 23
1887	1. 55	--------	3. 08	2. 95	4. 25	7. 46	2. 20	--------	4. 86
1888	2. 23	--------	4. 38	2. 98	4. 10	7. 81	2. 55	--------	5. 61
1889	1. 77	--------	3. 44	3. 11	4. 81	8. 45	2. 36	--------	5. 22
1890	2. 15	2. 85	3. 56	3. 00	4. 50	8. 13	2. 52	3. 50	5. 01
Average	1. 94	--------	3. 68	2. 96	4. 36	7. 82	2. 39	--------	5. 19
1891	2. 86	3. 85	4. 94	3. 39	5. 01	8. 45	3. 08	4. 30	6. 06
1892	3. 05	4. 17	5. 06	3. 24	4. 91	7. 97	3. 12	4. 42	5. 98
1893	2. 26	3. 32	4. 07	3. 42	5. 21	8. 43	2. 70	4. 03	5. 39
1894	2. 26	3. 96	4. 65	3. 38	5. 34	8. 57	2. 67	4. 50	5. 91
1895	3. 09	4. 78	5. 46	2. 95	4. 51	7. 26	3. 04	4. 68	6. 00
Average	2. 69	4. 02	4. 84	3. 27	4. 99	8. 12	2. 91	4. 38	5. 87

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[1] Before 1910 certain States did not maintain records of injuries. The above rates are based exclusively on tonnage and men employed in States for which injury records are available.

TABLE 43.—*Coal-mine-fatality rates for the United States, 1870–1957*—Continued

[Includes underground and surface injuries]

Year	Bituminous-coal mines			Anthracite mines			Total		
	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined
1896	2.51	3.92	4.45	3.36	5.79	9.22	2.85	4.62	5.85
1897	2.38	3.64	3.99	2.82	5.64	8.04	2.55	4.27	5.08
1898	2.64	3.75	4.06	2.82	5.57	7.70	2.71	4.28	4.97
1899	3.05	3.91	4.25	3.30	5.72	7.63	3.14	4.40	5.08
1900	3.74	4.79	5.32	2.85	5.15	7.16	3.44	4.87	5.72
Average	2.90	4.06	4.46	3.03	5.58	7.94	2.95	4.50	5.34
1901	3.16	4.21	4.74	3.53	5.40	7.60	3.27	4.54	5.40
1902	3.93	5.13	5.58	2.03	5.25	7.25	3.38	5.15	5.81
1903	3.47	4.63	5.07	3.44	5.01	6.94	3.46	4.72	5.47
1904	3.35	4.98	5.26	3.82	5.73	8.13	3.48	5.17	5.88
1905	3.53	5.02	5.14	3.89	5.43	8.29	3.63	5.14	5.78
Average	3.49	4.81	5.17	3.36	5.38	7.69	3.45	4.95	5.67
1906	3.38	4.76	4.72	3.43	5.28	7.81	3.39	4.87	5.27
1907	4.99	6.40	6.46	4.23	5.77	8.27	4.81	6.25	6.78
1908	3.50	5.44	5.42	3.89	5.84	8.14	3.60	5.54	5.97
1909	4.15	5.58	5.46	3.40	4.79	6.99	3.96	5.35	5.73
1910	4.00	5.53	5.32	3.55	4.65	7.11	3.89	5.30	5.62
Average	4.01	5.57	5.50	3.70	5.25	7.67	3.94	5.48	5.89
1911	3.53	5.02	4.82	4.02	4.90	7.73	3.65	4.97	5.35
1912	3.31	4.46	4.04	3.45	4.48	7.12	3.35	4.46	4.53
1913	3.79	4.90	4.53	3.52	4.10	6.75	3.73	4.70	4.89
1914	3.19	4.90	4.40	3.31	4.05	6.55	3.22	4.66	4.78
1915	3.02	4.47	3.80	3.32	4.33	6.58	3.09	4.44	4.27
Average	3.27	4.75	4.31	3.52	4.37	6.95	3.40	4.65	4.76
1916	2.98	3.88	3.33	3.47	4.11	6.34	3.09	3.93	3.77
1917	3.50	4.33	3.83	3.77	3.98	5.84	3.56	4.25	4.14
1918	3.30	3.97	3.50	3.75	3.83	5.58	3.38	3.94	3.80
1919	2.71	4.16	3.62	4.11	4.64	7.21	2.99	4.28	4.19
1920	2.78	3.79	3.13	3.38	3.74	5.48	2.90	3.78	3.45
Average	3.05	4.03	3.48	3.70	4.06	6.07	3.18	4.03	3.86
1921	2.18	4.38	3.48	3.43	3.80	6.05	2.42	4.20	3.94
1922	2.45	5.16	3.99	1.91	3.81	5.49	2.35	4.90	4.16
1923	2.77	4.65	3.46	3.23	3.62	5.45	2.85	4.39	3.74
1924	3.08	5.39	3.94	3.10	3.39	5.64	3.08	4.80	4.20
1925	3.12	4.79	3.53	2.50	4.12	6.47	2.98	4.65	3.84
Average	2.70	4.87	3.67	2.83	3.71	5.80	2.73	4.58	3.96

TABLE 43.—*Coal-mine-fatality rates for the United States, 1870–1957*—Continued

[Includes underground and surface injuries]

Year	Bituminous-coal mines			Anthracite mines			Total		
	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined	Per thousand employed	Per thousand 300-day workers	Per million tons mined
1926	3. 48	4. 86	3. 60	2. 74	3. 37	5. 36	3. 32	4. 50	3. 83
1927	2. 93	4. 60	3. 36	2. 96	3. 94	6. 11	2. 94	4. 43	3. 73
1928	3. 31	4. 90	3. 45	2. 78	3. 85	5. 93	3. 19	4. 64	3. 78
1929	3. 39	4. 63	3. 19	3. 18	4. 24	6. 53	3. 34	4. 54	3. 59
1930	3. 28	5. 26	3. 46	2. 94	4. 22	6. 40	3. 20	5. 00	3. 84
Average	3. 27	4. 84	3. 42	2. 92	3. 90	6. 04	3. 19	4. 61	3. 75
1931	2. 40	4. 42	2. 83	2. 75	4. 43	6. 42	2. 48	4. 42	3. 31
1932	2. 36	4. 85	3. 09	2. 05	3. 83	4. 99	2. 29	4. 60	3. 36
1933	1. 99	3. 58	2. 50	2. 21	3. 58	4. 66	2. 03	3. 58	2. 78
1934	2. 09	3. 52	2. 67	2. 47	3. 61	4. 69	2. 16	3. 54	2. 94
1935	2. 09	3. 53	2. 60	2. 66	4. 26	5. 24	2. 20	3. 67	2. 92
Average	2. 18	3. 93	2. 73	2. 44	3. 96	5. 23	2. 24	3. 93	3. 06
1936	2. 28	3. 46	2. 52	2. 39	3. 73	4. 46	2. 30	3. 50	2. 73
1937	2. 44	3. 74	2. 68	2. 17	3. 44	4. 15	2. 40	3. 69	2. 83
1938	1. 98	3. 68	2. 52	2. 34	4. 08	4. 88	2. 04	3. 76	2. 79
1939	1. 95	3. 29	2. 19	2. 24	3. 61	4. 11	2. 00	3. 35	2. 41
1940	2. 73	4. 07	2. 61	1. 99	3. 16	3. 57	2. 60	3. 92	2. 71
Average	2. 28	3. 65	2. 51	2. 23	3. 60	4. 23	2. 27	3. 64	2. 70
1941	2. 34	3. 28	2. 08	2. 18	3. 16	3. 58	2. 32	3. 26	2. 22
1942	2. 77	3. 41	2. 14	2. 75	3. 45	3. 88	2. 77	3. 42	2. 30
1943	3. 01	3. 44	2. 06	2. 85	3. 17	3. 80	2. 98	3. 39	2. 22
1944	2. 99	3. 22	1. 81	2. 24	2. 29	2. 74	2. 86	3. 05	1. 90
1945	2. 53	2. 96	1. 60	1. 96	2. 19	2. 60	2. 44	2. 82	1. 69
Average	2. 72	3. 27	1. 94	2. 41	2. 84	3. 32	2. 67	3. 20	2. 06
1946	2. 06	2. 88	1. 49	2. 22	2. 47	2. 86	2. 09	2. 80	1. 63
1947	2. 39	3. 04	1. 57	2. 20	2. 57	3. 03	2. 36	2. 96	1. 69
1948	2. 01	2. 73	1. 45	1. 76	2. 00	2. 40	1. 97	2. 60	1. 54
1949	1. 21	2. 19	1. 13	1. 20	1. 83	2. 11	1. 21	2. 13	1. 22
1950	1. 35	2. 19	1. 06	1. 25	1. 77	2. 09	1. 33	2. 11	1. 14
Average	1. 80	2. 65	1. 36	1. 73	2. 16	2. 54	1. 79	2. 56	1. 47
1951	1. 84	2. 74	1. 28	1. 45	2. 09	2. 41	1. 78	2. 64	1. 37
1952	1. 33	2. 14	. 96	1. 58	2. 29	2. 44	1. 37	2. 16	1. 07
1953	1. 34	2. 12	. 87	1. 15	2. 04	2. 10	1. 31	2. 11	. 95
1954	1. 38	2. 34	. 85	1. 48	2. 72	2. 14	1. 40	2. 40	. 94
1955	1. 60	2. 28	. 78	1. 74	2. 86	2. 07	1. 61	2. 35	. 85
Average	1. 51	2. 35	. 96	1. 46	2. 32	2. 26	1. 50	2. 34	1. 05
1956	1. 72	2. 43	. 79	1. 72	2. 44	1. 74	1. 72	2. 43	. 85
1957	1. 91	2. 78	. 87	1. 65	2. 53	2. 00	1. 88	2. 75	. 93

TABLE 44.—**Bituminous-coal mines:** *Fatalities, by principal causes, 1906–57* [1]

Year	Falls of roof and face [2]	Haulage	Gas or dust explosions	Explosives	Electricity	All other underground	Total underground	Shaft	Underground and shaft	Surface [3]	Grand total
1906	826	192	219	115	52	27	1,431	73	1,504	77	1,581
1907	911	260	911	134	49	99	2,364	59	2,423	111	2,534
1908	829	229	320	109	53	97	1,637	53	1,690	77	1,767
1909	975	240	264	122	52	312	1,965	37	2,002	73	2,075
1910	1,061	295	477	113	76	46	2,068	60	2,128	92	2,220
5-year average	921	243	438	119	56	116	1,893	56	1,949	86	2,035
1911	1,007	294	331	72	92	44	1,840	31	1,871	86	1,957
1912	943	296	255	70	75	44	1,683	39	1,722	96	1,818
1913	1,007	344	464	63	79	82	2,039	32	2,071	96	2,167
1914	903	309	305	56	86	55	1,714	41	1,755	104	1,859
1915	818	269	270	76	85	35	1,553	30	1,583	100	1,683
5-year average	936	303	325	67	83	52	1,766	35	1,801	96	1,897
1916	850	330	183	60	81	49	1,553	34	1,587	84	1,671
1917	965	433	319	55	76	60	1,908	44	1,952	162	2,114
1918	1,052	446	103	85	77	76	1,839	41	1,880	149	2,029
1919	878	310	149	57	64	79	1,537	39	1,576	112	1,688
1920	937	342	124	82	70	72	1,627	34	1,661	120	1,781
5-year average	936	372	176	68	74	67	1,693	38	1.731	126	1,857
1921	782	275	62	74	76	71	1,340	25	1,365	83	1,448
1922	780	286	298	55	71	56	1,546	36	1,582	102	1,684
1923	948	347	330	66	70	64	1,825	31	1,856	97	1,953
1924	846	299	486	46	72	56	1,805	17	1,822	84	1,906
1925	910	310	302	49	80	76	1,727	30	1,757	77	1,834
5-year average	853	303	296	58	74	65	1,649	27	1,676	89	1,765
1926	994	384	373	46	94	62	1,953	27	1,980	85	2,065
1927	924	309	187	48	94	70	1,632	22	1,654	88	1,742
1928	825	313	347	41	82	54	1,662	13	1,675	54	1,729
1929	922	349	168	45	75	56	1,615	17	1,632	73	1,705
1930	856	285	234	31	63	68	1,537	9	1,546	73	1,619
5-year average	904	328	262	42	82	62	1,680	17	1,697	75	1,772
1931	624	194	68	15	62	44	1,007	19	1,026	54	1,080
1932	466	146	162	21	42	45	882	13	895	63	958
1933	458	162	27	24	46	45	762	10	772	61	833
1934	539	168	40	21	53	64	885	9	894	64	958
1935	524	198	26	31	43	70	892	13	905	63	968
5-year average	522	174	65	22	49	54	886	12	898	61	959
1936	624	202	41	31	44	81	1,023	11	1,034	64	1,098
1937	606	244	116	31	52	64	1,113	15	1,128	70	1,198
1938	474	142	84	23	38	53	814	9	823	57	880
1939	500	155	43	15	49	56	818	5	823	44	867
1940	520	192	292	28	30	62	1,124	12	1,136	68	1,204
5-year average	545	187	115	26	42	63	978	11	989	60	1,049
1941	574	191	89	24	42	65	985	9	994	78	1,072
1942	592	241	148	16	51	89	1,137	6	1,143	102	1,245
1943	592	227	166	27	33	80	1,125	5	1,130	95	1,225
1944	563	211	82	19	26	136	987	28	1,015	109	1,124
1945	453	196	72	23	20	60	824	7	831	94	925
5-year average	555	213	102	22	34	86	1,012	11	1.023	95	1,118
1946	442	152	27	12	17	44	694	17	711	84	795
1947	456	190	154	23	20	36	879	15	894	91	985
1948	474	148	39	22	19	41	743	18	761	101	862
1949	270	94	3	14	10	25	416	9	425	69	494
1950	313	98	3	10	11	24	459	10	469	81	550
5-year average	391	137	45	16	15	34	638	14	652	85	737
1951	309	101	153	7	18	24	612	6	618	66	684
1952	240	95	7	5	10	22	379	10	389	60	449
1953	233	74	9	4	12	13	345	4	349	48	397
1954	177	62	17	5	11	15	287	4	291	43	334
1955	199	61	2	10	14	15	301	2	303	57	360
5-year average	231	79	38	6	13	18	385	5	390	55	445
1956	215	71	5	8	14	28	341	1	342	50	392
1957	218	53	63	7	11	21	373	2	375	52	427

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[1] Figures for 1906–1909 cover only States that maintained complete records of fatal injuries. These represent 98 to 99 percent of the total production of coal in the United States. Figures for 1910 to date represent the entire bituminous-coal industry.

[2] Since 1955, data in major-cause tables shown elsewhere in this publication will not necessarily add to total shown here because they do not include falls of roof and face resulting from bumps or bursts, equipment knocking out supports, etc.

[3] Includes strip mines and for 1955–57 auger mines.

TABLE 45.—**Pennsylvania anthracite mines:** *Fatalities, by principal causes, 1906–57*

Year	Falls of roof and face [1]	Haulage	Gas or dust explosions	Explosives	Electricity	All other underground	Total underground	Shaft	Underground and shaft	Surface [2]	Grand total
1906	214	67	46	82	1	27	437	19	456	101	557
1907	294	88	45	87	3	57	574	27	601	107	708
1908	299	90	55	94	1	33	572	24	596	82	678
1909	254	71	31	69	6	49	480	10	490	77	567
1910	253	93	20	82	3	38	489	20	509	92	601
5-year average	262	82	39	83	3	41	510	20	530	92	622
1911	252	92	34	88	2	126	594	21	615	84	699
1912	243	79	35	77	5	37	476	22	498	103	601
1913	257	85	50	75	1	55	523	30	553	65	618
1914	228	76	44	90	3	45	486	47	533	62	595
1915	261	80	34	79	4	58	516	10	526	60	586
5-year average	248	83	39	82	3	64	519	26	545	75	620
1916	215	64	43	86	9	57	474	15	489	66	555
1917	265	64	41	55	3	39	467	16	483	99	582
1918	242	66	26	50	11	47	442	11	453	98	551
1919	229	73	42	149	4	49	546	13	559	76	635
1920	197	66	36	49	6	40	394	22	416	75	491
5-year average	229	67	38	79	6	46	465	15	480	83	563
1921	243	70	64	68	4	50	499	11	510	37	547
1922	128	58	13	38	3	19	259	5	264	36	300
1923	219	73	42	49	5	45	433	15	448	61	509
1924	216	58	50	53	8	45	430	12	442	54	496
1925	170	56	43	53	4	20	346	4	350	50	400
5-year average	195	63	42	52	5	36	393	10	403	47	450
1926	220	52	49	50	2	39	412	8	420	33	453
1927	225	52	60	62	6	43	448	7	455	34	489
1928	243	52	29	33	6	42	405	12	417	30	447
1929	260	65	27	43	6	31	432	12	444	38	482
1930	243	40	30	47	8	34	402	10	412	32	444
5-year average	238	52	39	47	6	38	420	10	430	33	463
1931	234	43	20	25	3	23	348	9	357	26	383
1932	161	33	7	15	5	12	233	6	239	10	249
1933	119	32	13	10	7	17	198	10	208	23	231
1934	150	29	12	15	3	25	234	8	242	26	268
1935	140	30	23	19	2	15	229	22	251	23	274
5-year average	161	33	15	17	4	18	248	11	259	22	281
1936	120	26	16	20	8	26	216	14	230	14	244
1937	120	31	---------	14	4	16	185	11	196	19	215
1938	128	23	20	11	2	17	201	12	213	12	225
1939	121	27	3	17	2	15	185	13	198	13	211
1940	105	36	5	8	7	8	169	8	177	7	184
5-year average	118	29	9	14	5	16	191	12	203	13	216
1941	100	27	8	12	5	14	166	12	178	16	194
1942	132	37	9	13	6	12	209	5	214	12	226
1943	112	36	15	9	2	18	192	5	197	29	226
1944	82	16	4	16	3	18	139	12	151	23	174
1945	72	19	4	11	1	13	120	9	129	14	143
5-year average	100	27	8	12	3	15	165	9	174	19	193
1946	104	16	2	8	3	11	144	8	152	21	173
1947	84	14	35	7	4	3	147	6	153	20	173
1948	86	9	2	7	1	6	111	8	119	18	137
1949	54	10	3	3	---------	1	71	12	83	8	91
1950	58	4	5	5	1	1	74	4	78	15	93
5-year average	77	11	9	6	2	4	109	8	117	16	133
1951	51	15	7	5	1	5	84	5	89	12	101
1952	51	11	4	4	---------	6	76	9	85	14	99
1953	46	2	5	1	2	3	59	1	60	4	64
1954	39	6	1	---------	1	2	49	2	51	11	62
1955	35	6	2	2	---------	3	48	1	49	11	60
5-year average	44	8	4	2	1	4	63	4	67	10	77
1956	32	5	4	1	2	---------	44	4	48	8	56
1957	31	5	3	4	1	4	48	1	49	2	51

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[1] Since 1955, data in major-cause tables shown elswehere in this publication will not necessarily add to total shown here because they do not include falls of roof and face resulting from bumps or bursts, equipment knocking out supports, etc.

[2] Includes strip mines, culm banks, dredges, and preparation plants.

TABLE 46.—**Bituminous-coal mines:** *Percentage distribution of fatalities, by causes, 1906–57* [1]

Year	Falls of roof and face	Haulage	Gas or dust explosions	Explosives	Electricity	All other underground	Total underground	Shaft	Underground and shaft	Surface [2]	Grand total
1906	52.2	12.1	13.9	7.3	3.3	1.7	90.5	4.6	95.1	4.9	100.0
1907	36.0	10.3	36.0	5.2	1.9	3.9	93.3	2.3	95.6	4.4	100.0
1908	46.9	13.0	18.1	6.1	3.0	5.5	92.6	3.0	95.6	4.4	100.0
1909	47.0	11.6	12.7	5.9	2.5	15.0	94.7	1.8	96.5	3.5	100.0
1910	47.8	13.3	21.5	5.1	3.4	2.1	93.2	2.7	95.9	4.1	100.0
5-year average	45.3	11.9	21.5	5.8	2.8	5.7	93.0	2.8	95.8	4.2	100.0
1911	51.5	15.0	16.9	3.7	4.7	2.2	94.0	1.6	95.6	4.4	100.0
1912	51.9	16.3	14.0	3.9	4.1	2.4	92.6	2.1	94.7	5.3	100.0
1913	46.5	15.9	21.4	2.9	3.6	3.8	94.1	1.5	95.6	4.4	100.0
1914	48.6	16.6	16.4	3.0	4.6	3.0	92.2	2.2	94.4	5.6	100.0
1915	48.6	16.0	16.0	4.5	5.1	2.1	92.3	1.8	94.1	5.9	100.0
5-year average	49.3	16.0	17.1	3.5	4.4	2.8	93.1	1.8	94.9	5.1	100.0
1916	50.9	19.7	11.0	3.6	4.8	2.9	92.9	2.1	95.0	5.0	100.0
1917	45.7	20.5	15.1	2.6	3.6	2.8	90.3	2.0	92.3	7.7	100.0
1918	51.8	22.0	5.1	4.2	3.8	3.7	90.6	2.1	92.7	7.3	100.0
1919	52.0	18.4	8.8	3.4	3.8	4.7	91.1	2.3	93.4	6.6	100.0
1920	52.6	19.2	7.0	4.6	3.9	4.1	91.4	1.9	93.3	6.7	100.0
5-year average	50.4	20.0	9.5	3.7	4.0	3.6	91.2	2.0	93.2	6.8	100.0
1921	54.0	19.0	4.3	5.1	5.2	4.9	92.5	1.8	94.3	5.7	100.0
1922	46.3	17.0	17.7	3.3	4.2	3.3	91.8	2.1	93.9	6.1	100.0
1923	48.5	17.8	16.9	3.3	3.6	3.3	93.4	1.6	95.0	5.0	100.0
1924	44.4	15.7	25.5	2.4	3.8	2.9	94.7	.9	95.6	4.4	100.0
1925	49.6	16.9	16.5	2.7	4.4	4.1	94.2	1.6	95.8	4.2	100.0
5-year average	48.3	17.1	16.8	3.3	4.2	3.7	93.4	1.6	95.0	5.0	100.0
1926	48.1	18.6	18.1	2.2	4.6	3.0	94.6	1.3	95.9	4.1	100.0
1927	53.1	17.7	10.7	2.8	5.4	4.0	93.7	1.2	94.9	5.1	100.0
1928	47.7	18.1	20.1	2.4	4.7	3.1	96.1	.8	96.9	3.1	100.0
1929	54.1	20.5	9.9	2.6	4.4	3.2	94.7	1.0	95.7	4.3	100.0
1930	52.9	17.6	14.4	1.9	3.9	4.2	94.9	.6	95.5	4.5	100.0
5-year average	51.0	18.5	14.8	2.4	4.6	3.5	94.8	1.0	95.8	4.2	100.0
1931	57.8	18.0	6.3	1.4	5.7	4.0	93.2	1.8	95.0	5.0	100.0
1932	48.7	15.2	16.9	2.2	4.4	4.7	92.1	1.3	93.4	6.6	100.0
1933	55.0	19.4	3.3	2.9	5.5	5.4	91.5	1.2	92.7	7.3	100.0
1934	56.3	17.5	4.2	2.2	5.5	6.7	92.4	.9	93.3	6.7	100.0
1935	54.1	20.5	2.7	3.2	4.4	7.2	92.1	1.4	93.5	6.5	100.0
5-year average	54.4	18.2	6.8	2.3	5.1	5.6	92.4	1.2	93.6	6.4	100.0
1936	56.8	18.4	3.8	2.8	4.0	7.4	93.2	1.0	94.2	5.8	100.0
1937	50.6	20.4	9.7	2.6	4.3	5.3	92.9	1.3	94.2	5.8	100.0
1938	53.9	16.1	9.6	2.6	4.3	6.0	92.5	1.0	93.5	6.5	100.0
1939	57.7	17.9	4.9	1.7	5.7	6.4	94.3	.6	94.9	5.1	100.0
1940	43.2	15.9	24.3	2.3	2.5	5.2	93.4	1.0	94.4	5.6	100.0
5-year average	51.9	17.8	11.0	2.5	4.0	6.0	93.2	1.1	94.3	5.7	100.0
1941	53.5	17.8	8.3	2.2	4.0	6.1	91.9	.8	92.7	7.3	100.0
1942	47.5	19.4	11.9	1.3	4.1	7.1	91.3	.5	91.8	8.2	100.0
1943	48.3	18.5	13.6	2.2	2.7	6.5	91.8	.4	92.2	7.8	100.0
1944	50.1	18.8	2.8	1.7	2.3	12.1	87.8	2.5	90.3	9.7	100.0
1945	48.9	21.2	7.8	2.5	2.2	6.5	89.1	.7	89.8	10.2	100.0
5-year average	49.6	19.1	9.1	2.0	3.0	7.7	90.5	1.0	91.5	8.5	100.0
1946	55.6	19.1	3.4	1.5	2.1	5.6	87.3	2.1	89.4	10.6	100.0
1947	46.3	19.3	15.6	2.3	2.0	3.7	89.2	1.6	90.8	9.2	100.0
1948	54.9	17.2	4.5	2.6	2.2	4.8	86.2	2.1	88.3	11.7	100.0
1949	54.7	19.0	.6	2.8	2.0	5.1	84.2	1.8	86.0	14.0	100.0
1950	56.9	17.8	.6	1.8	2.0	4.4	83.5	1.8	85.3	14.7	100.0
5-year average	53.1	18.6	6.1	2.2	2.0	4.6	86.6	1.9	88.5	11.5	100.0
1951	45.2	14.8	22.4	1.0	2.6	3.5	89.5	.9	90.4	9.6	100.0
1952	53.4	21.2	1.6	1.1	2.2	4.9	84.4	2.2	86.6	13.4	100.0
1953	58.7	18.6	2.3	1.0	3.0	3.3	86.9	1.0	87.9	12.1	100.0
1954	53.0	18.5	5.1	1.5	3.3	4.5	85.9	1.2	87.1	12.9	100.0
1955	55.2	16.9	.6	2.8	3.9	4.2	83.6	.6	84.2	15.8	100.0
5-year average	51.9	17.7	8.5	1.4	2.9	4.1	86.5	1.2	87.7	12.3	100.0
1956	54.8	18.1	1.3	2.0	3.6	7.1	86.9	.3	87.2	12.8	100.0
1957	51.0	12.4	14.8	1.6	2.6	4.9	87.3	.5	87.8	12.2	100.0

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[1] Figures for 1906–1909 cover only States that maintained complete records of fatal injuries. These represent 98 to 99 percent of the total production of coal in the United States. Figures for 1910 to date represent the entire bituminous-coal industry.

[2] Includes strip mines and for 1955–57 auger mines.

TABLE 47.—**Pennsylvania anthracite mines:** *Percentage distribution of fatalities, by causes, 1906-57*

Year	Falls of roof and face	Haulage	Gas or dust explosions	Explosives	Electricity	All other underground	Total underground	Shaft	Underground and shaft	Surface[1]	Grand total
1906	38.4	12.0	8.3	14.7	0.2	4.9	78.5	3.4	81.9	18.1	100.0
1907	41.5	12.4	6.4	12.3	.4	8.1	81.1	3.8	84.9	15.1	100.0
1908	44.1	13.3	8.1	13.9	.1	4.9	84.4	3.5	87.9	12.1	100.0
1909	44.8	12.5	5.5	12.2	1.1	8.6	84.7	1.7	86.4	13.6	100.0
1910	42.1	15.5	3.3	13.7	.5	6.3	81.4	3.3	84.7	15.3	100.0
5-year average	42.1	13.2	6.3	13.3	.5	6.6	82.0	3.2	85.2	14.8	100.0
1911	36.1	13.2	4.9	12.6	.2	18.0	85.0	3.0	88.0	12.0	100.0
1912	40.4	13.2	5.8	12.8	.8	6.2	79.2	3.7	82.9	17.1	100.0
1913	41.6	13.8	8.1	12.1	.1	8.9	84.6	4.9	89.5	10.5	100.0
1914	38.3	12.8	7.4	15.1	.5	7.6	81.7	7.9	89.6	10.4	100.0
1915	44.5	13.7	5.8	13.5	.7	9.9	88.1	1.7	89.8	10.2	100.0
5-year average	40.0	13.4	6.3	13.2	.5	10.3	83.7	4.2	87.9	12.1	100.0
1916	38.7	11.5	7.8	15.5	1.6	10.3	85.4	2.7	88.1	11.9	100.0
1917	45.5	11.0	7.0	9.5	.5	6.7	80.2	2.8	83.0	17.0	100.0
1918	43.9	12.0	4.7	9.1	2.0	8.5	80.2	2.0	82.2	17.8	100.0
1919	36.1	11.5	6.6	23.5	.6	7.7	86.0	2.0	88.0	12.0	100.0
1920	40.1	13.5	7.3	10.0	1.2	8.1	80.2	4.5	84.7	15.3	100.0
5-year average	40.7	11.9	6.7	14.0	1.1	8.2	82.6	2.7	85.3	14.7	100.0
1921	44.4	12.8	11.7	12.4	.7	9.2	91.2	2.0	93.2	6.8	100.0
1922	42.7	19.3	4.3	12.7	1.0	6.3	86.3	1.7	88.0	12.0	100.0
1923	43.0	14.3	8.3	9.6	1.0	8.9	85.1	2.9	88.0	12.0	100.0
1924	43.5	11.7	10.1	10.7	1.6	9.1	86.7	2.4	89.1	10.9	100.0
1925	42.5	14.0	10.8	13.2	1.0	5.0	86.5	1.0	87.5	12.5	100.0
5-year average	43.3	14.0	9.3	11.6	1.1	8.0	87.3	2.3	89.6	10.4	100.0
1926	48.6	11.5	10.8	11.0	.4	8.6	90.9	1.8	92.7	7.3	100.0
1927	46.0	10.6	12.3	12.7	1.2	8.8	91.6	1.4	93.0	7.0	100.0
1928	54.4	11.6	6.5	7.4	1.3	9.4	90.6	2.7	93.3	6.7	100.0
1929	53.9	13.5	5.6	8.9	1.2	6.5	89.6	2.5	92.1	7.9	100.0
1930	54.7	9.0	6.8	10.6	1.8	7.6	90.5	2.3	92.8	7.2	100.0
5-year average	51.4	11.2	8.4	10.2	1.3	8.2	90.7	2.2	92.9	7.1	100.0
1931	61.1	11.2	5.2	6.6	.8	6.0	90.9	2.3	93.2	6.8	100.0
1932	64.7	13.3	2.8	6.0	2.0	4.8	93.6	2.4	96.0	4.0	100.0
1933	51.5	13.9	5.6	4.3	3.0	7.4	85.7	4.3	90.0	10.0	100.0
1934	56.0	10.8	4.5	5.6	1.1	9.3	87.3	3.0	90.3	9.7	100.0
1935	51.1	11.0	8.4	6.9	.7	5.5	83.6	8.0	91.6	8.4	100.0
5-year average	57.3	11.8	5.3	6.1	1.4	6.4	88.3	3.9	92.2	7.8	100.0
1936	49.2	10.7	6.6	8.2	3.2	10.6	88.5	5.8	94.3	5.7	100.0
1937	55.8	14.4	--------	6.5	1.9	7.4	86.0	5.2	91.2	8.8	100.0
1938	56.9	10.2	8.9	4.9	.9	7.5	89.3	5.4	94.7	5.3	100.0
1939	57.3	12.8	1.4	8.1	1.0	7.1	87.7	6.1	93.8	6.2	100.0
1940	57.1	19.6	2.7	4.3	3.8	4.3	91.8	4.4	96.2	3.8	100.0
5-year average	54.6	13.4	4.2	6.5	2.3	7.4	88.4	5.6	94.0	6.0	100.0
1941	51.6	13.9	4.1	6.2	2.6	7.2	85.6	6.2	91.8	8.2	100.0
1942	58.4	16.4	4.0	5.8	2.6	5.3	92.5	2.2	94.7	5.3	100.0
1943	49.6	15.9	6.6	4.0	.9	8.0	85.0	2.2	87.2	12.8	100.0
1944	47.1	9.2	2.3	9.2	1.7	10.4	79.9	6.9	86.8	13.2	100.0
1945	50.3	13.3	2.8	7.7	.7	9.1	83.9	6.3	90.2	9.8	100.0
5-year average	51.8	14.0	4.1	6.2	1.6	7.8	85.5	4.7	90.2	9.8	100.0
1946	60.1	9.2	1.2	4.6	1.7	6.4	83.2	4.7	87.9	12.1	100.0
1947	48.6	8.1	20.2	4.1	2.3	1.7	85.0	3.4	88.4	11.6	100.0
1948	62.8	6.6	1.5	5.1	.7	4.3	81.0	5.9	86.9	13.1	100.0
1949	59.3	11.0	3.3	3.3	--------	1.1	78.0	13.2	91.2	8.8	100.0
1950	62.3	4.3	5.4	5.4	1.1	1.1	79.6	4.3	83.9	16.1	100.0
5-year average	57.9	8.3	6.8	4.5	1.5	3.0	82.0	6.0	88.0	12.0	100.0
1951	50.4	14.8	6.9	5.0	1.0	5.0	83.1	5.0	88.1	11.9	100.0
1952	51.5	11.1	4.1	4.1	--------	6.0	76.8	9.1	85.9	14.1	100.0
1953	71.9	3.1	7.8	1.6	3.1	4.7	92.2	1.6	93.8	6.2	100.0
1954	62.9	9.6	1.6	--------	1.6	3.3	79.0	3.3	82.3	17.7	100.0
1955	58.4	10.0	3.3	3.3	--------	5.0	80.0	1.7	81.7	18.3	100.0
5-year average	57.1	10.4	5.2	2.6	1.3	5.2	81.8	5.2	87.0	13.0	100.0
1956	57.2	8.9	7.1	1.8	3.6	--------	78.6	7.1	85.7	14.3	100.0
1957	60.8	9.8	5.9	7.8	2.0	7.8	94.1	2.0	96.1	3.9	100.0

[1] Includes strip mines, culm banks, dredges, and preparation plants.

U.S. GOVERNMENT PRINTING OFFICE: 1960